Gleanings in Bee Culture

ESTABLISHED 1873

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NOVEMBER, 1935

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The Monthly Honey Market

U. S. GOVERNMENT REPORT

Information from Producing Areas (first half of October).

California Points: Southern California—Temperatures generally averaged about normal, and precipitation was limited. Bees are generally in good condition, though some have extracted so closely that stores are a little short. Brood seems to be up to normal. Bees are working lightly on mustard, eucalyptus, goldenrod, blue curl, rabbit brush and Indian buckwheat. Prices have been firm to stronger, with orange honey advancing more than other flavors. Sales by beekeepers in ton lots or more, per lb., f. o. b., southern California delivery points, reported as follows: Orange, extra white to water white, 5⅞-6c, some sales extra white low as 5½; white, 5-5¼c; sage, water white, 5¼-5½c; extra white, 5-5¼c; few, 5½c; white, 4⅞-5c; some, 4⅝c; light amber, 4½c; light amber buckwheat, few sales, 4¼-4⅜c; some, 4c per lb., with cans returned; buckwheat-sage, light amber to extra light amber, 4¼-4½c; alfalfa, light amber to extra light amber, 4¾c; No. 1 sage comb, $4.50 per case. The market for beeswax was firm at mostly 17½c per lb. delivered Los Angeles, with fancy capping wax bringing 18-18½c per lb. Central California—Colonies are generally in good shape as late flows were conducive to late brood rearing. Blue curl plant growth was unusually heavy due to the damp weather, and the fall flow from this source averaged 60 pounds to the colony. Bees are still working a little on blue curl, clover, lippia and other late plants. Winter stores are irregular as some beekeepers have extracted rather closely. Brokers and bottlers are active in the field buying for winter needs. Prices were generally steady to slightly stronger than those of the previous two weeks. A slight increase in export demand was reported during the early part of the month. Sales reported f. o. b. central California delivery points in ton lots or more, per lb.: Sage, white to extra white, 4½-5c; light amber to extra light amber, 4-4¼c; sage-buckwheat, light amber to extra light amber, 3¾-4c; cotton, light amber to extra light amber, mostly 3¾c; cotton-alfalfa, light amber to extra light amber, 3¾-4c; light amber alfalfa, 4¼c; extra light amber to amber star thistle, 4¾c; mixed wild flowers, light amber to extra light amber, 3½-3¾c. Northern California—Fairly heavy rains have fallen but bees not killed by arsenic are still securing sufficient honey for their daily needs from turkey mullein, star thistle, goldenrod and blue curl. The star thistle crop north of Colusa is reported unusually good. Beekeepers are generally holding honey rather firmly. Some dealers have bought in the anticipation of a general price advance but others have bought more lightly. Sales by beekeepers in ton lots or more, f. o. b. northern California points, per lb. follows: Star thistle, extra light amber to white, 4½-5c; light amber, 3½-4c; some, 4¼c; amber, 3⅛-3¼c; mixed wild flowers, light amber, 3½-3¾c; amber, 3⅛-3¼c. Beeswax has moved rather lightly, with the market quoted at 16½-17½c per lb. f. o. b. California delivery points.

Pacific Northwest: West of Cascades—Cloudy, rainy, foggy, cool weather has kept bees in the hives during much of the time, but honey plants are still in good condition. Bees are working lightly on wild buckwheat, aster, French pink and dandelion. One of the largest plantings of vetch in years has recently been sowed in western Oregon, which should be helpful for next year's flow. Beekeepers are offering little honey at this time, and there is a definite trend reported toward slightly higher prices. The fireweed crop, while moderate, is not sufficient to meet demands. Few sales fireweed extracted reported at 6c per lb. Receipts of beeswax are light, with buyers offering 16-16½c per lb. delivered Portland, 15-16c per lb. delivered Seattle. East of Cascades: Brood rearing has been unusually heavy and bees generally have ample stores for winter. Honey plants are in poor shape for next year, however, due to lack of moisture, sweet clover in some areas being reported only 20 per cent of normal. Sales reported of light amber to white sweet clover-alfalfa at 5½c per lb., large lot small pails around 7c per lb., with buyers offering 5-5¾c per lb. for light amber and amber. Beeswax reported sold at 16c per lb.

Intermountain States: Inquiries for honey have been numerous and some beekeepers report that demand for honey exceeds the supply. With the increasing activities of buyers prices in some sections have advanced for local sales about 1c per lb. over last season's prices; in other areas prices show no increase. Because of the shortage some beekeepers are holding for higher prices. Price ranges are usually wide. White to water white sweet clover and alfalfa have sold recently in carload lots at 5-5¾c per lb., including several cars at 5½c and 5¾c; ton lots white have moved mostly at 5-6c per lb.; few lower; 60s, 5½-6½c; small pail, 6-8c; 1 large car white to light amber uncased, 5¼c per lb.; extra light amber, large lot, 4¾c; light amber, 2 cars, 5c, with containers furnished; ton lots, 4-5c; few up to 7c per lb. Comb honey is in exceptionally light supply and prices are higher than those of last year. One car white comb reported sold at $2.25 per case for No. 1; $2.00 for No. 2; with less carlots selling rather widely at $2.25-2.75 for fancy; 14-oz., high as $3.00. Choice, $2.40 per case.

Southern States: South central and southwestern Texas—Bees are gathering fall honey from broomweed, bitterweed, tievine, yellow top, rockbrush, white brush and other late flowers, and prospects are good for winter stores. Some bees are gathering a slight surplus. Honey plants are in good condition as a result of the late rains. Sales reported, extracted, 60s, 6-8c per lb.; small pails, 7-8c; few up to 12c; bulk comb, light amber, small pails, 10-11c per lb.

Summary.—Temperatures during this period have fluctuated in the eastern part of the country from extremely low to above normal, but

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temperatures have been above normal over most of the west. Consequently, although nectar flows have continued unexpectedly late in the west, the fall flows have been light over much of the east and north, and feeding will often be necessary, especially where extracting was at all close. Rainfall has been light over most of the country except the upper western coast area and portions of the extreme southeast. Although the main nectar-bearing plants look exceptionally well for next year from the plains area east as result of previous rains, many sections are now seriously in need of precipitation if the plants are to go into winter in satisfactory condition. For the country as a whole colonies appear to have ample young bees and to be approaching winter sufficiently strong. The 1935 crop of honey now appears to be the smallest in many years and may not exceed 140,000,000 pounds, judging from early returns. It is being disposed of and many orders are already being declined for lack of honey with which to fill them. Perhaps never before has the honey crop been so nearly cleaned up by the middle of October. In some sections the increased demand is being reflected in slightly higher prices, but in others in spite of a light crop price cutters have been active and have seriously affected the market price level. The comb honey crop is the lightest of record and market prices for comb honey are relatively higher than those of extracted, compared with those of recent years.

Monthly Report of Honey Producers

Early in October we sent the following questions to honey producers: 1. What per cent of the honey produced in your locality left the hands of the producers? Give answer in per cent. 2. At what price has honey been sold or contracted for, if any, in large lots (carload or less) in your locality during the past month for (a) extracted honey, per pound? (b) comb honey, fancy and No. 1, per case? 3. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per case? 4. What is the retail price to consumers in your locality of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy and No. 1, per section? 5. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid? 6. What is the condition of colonies for winter in your locality compared with normal, considering the number and age of bees and the supply of stores? Give answer in per cent. 7. How does the number of colonies to be wintered in your locality compare with that of last year? Give answer in per cent. 8. What is the present condition of honey plants in your locality as compared with the average? Give answer in per cent. The answers returned are tabulated as follows:

State. Name.	Pct. honey sold.	Large lots. Ex.	Large lots. Comb.	To grocers. Ex.	To grocers. Comb.	To retailers. Ex.	To retailers. Comb.	Movement.	Con. No. col.	Con. of col.	No. of plants
Ala. (J. M. Cutts)	..	..	..	.55	..	$.65	..	Fair	110	108	100
B. C. (A. W. Finlay)	..	.10½	..	.68	..	.82	..	Rapid	100	110	100
Calif. (L. L. Andrews)	3	.06	..	..	..	.60	.14	Fair	100	115	80
Colo. (O. E. Adcock)	30	.06	3.00	.41	..	.55	.15	Fair	100	80	100
Colo. (J. A. Green)	40	.05	..	.35	..	.42	..	Fair	90	100	90
Conn. (A. Latham)	5	..	..	.75	4.75	1.00	.28	Fair	125	100	100
Conn. (A. W. Yates)	..	..	..	.70	4.50	1.00	.30	Fair	100	100	..
Fla. (H. Hewitt)	100	..	..	.50	..	.65	..	Fair	100	100	100
Ga. (J. J. Wilder)	60	.06	..	.50	..	.65	..	Fair	100	115	100
Ind. (J. Smith)	25	..	..	.50	3.00	.65	.15	Fair	125	100	100
Ind. (T. C. Johnson)	10	..	..	.50	3.00	.60	.20	Fair	100	100	100
Ind. (E. S. Miller)	10	..	..	.47½	3.00	.60	.15	Fair	100	100	100
Kans. (J. F. Garner)	20	.07	2.75	.50	3.60	.65	.19	Fair	125	100	100
La. (E. C. Davis)	75	.05½	..	.40	..	.55	..	Fair	100	100	100
Me. (O. B. Griffin)	30	..	..	..	4.80	.25	..	..	90	110	100
Md. (S. G. Crocker)	25	..	..	.60	3.00	.75	.25	Fair	75	100	100
Mich. (I. D. Bartlett)	90	.06	..	.45	..	.60	.20	Rapid	75	100	100
Mich. (F. Markham)	50	.07	..	.50	..	.65	.19	Fair	90	90	125
Mich. (E. D. Townsend)	50	.07	..	..	..	..	..	Fair	100	80	100
Minn. (Francis Jager)	..	.07½	..	..	..	..	..	Rapid	80	100	75
Minn. (F. W. Ray)	50	.06¼	2.75	.40	3.50	.49	..	Fair	90	100	110
Minn. (B. L. Morehouse)	20	.06½	..	.50	..	.65	..	Fair	90	85	75
Nev. (Mrs. E. G. Norton)	90	.05	..	..	..	..	..	Rapid	90	100	100
Nev. (G. G. Schweis)	..	.04¾	2.25	..	..	..	..	Fair	100	100	90
N. Y. (Adams & Myers)	75	.06	..	.50	..	.75	.20	Fair	100	100	100
N. Y. (G. B. Howe)	50	.06½	..	.50	3.00	.60	.28	Fair	100	80	100
N. Y. (F. W. Lesser)	70	.07½	..	..	..	..	..	Rapid	100	110	90
N. Y. (N. L. Stevens)	60	.06	..	.40	..	.55	..	Fair	90	100	100
N. C. (C. S. Baumgarner)	100	..	..	.60	..	.75	.25	Fair	100	90	100
N. C. (W. J. Martin)	..	.06	..	.70	..	.90	.20	Fair	100	125	100
Minn. (M. W. Cousineau)	..	.06¼	..	..	..	.58	..	..	70	100	80
Ohio. (F. Leininger)	75	.07	2.50	..	..	..	..	Fair	100	100	125
Ohio. (J. F. Moore)	30	.07	3.00	.50	3.50	.75	.18	Fair	90	100	90
Ohio. (R. D. Hiatt)	50	.07	2.75	.55	3.50	.70	.19	Fair	100	110	125
Okla. (C. F. Stiles)	60	..	..	.47	..	.70	.18	Fair	95	105	100
Okla. (C. A. Baltzley)	100	.06½	3.00	..	3.60	.69	.21	Rapid	90	80	100
Ore. (H. A. Scullen)	20	..	..	.40	..	.52	.15	Fair	100	100	100
Pa. (H. A. Beaver)	50	..	..	.40	..	.52	.15	Rapid	100	100	80
Pa. (D. C. Gilham)	10	..	..	.70	3.75	1.00	.25	Fair	80	125	100
S. C. (E. S. Prevost)	100	..	..	..	..	..	..	Fair	80	80	100
S. D. (L. A. Syvrud)	..	..	..	.43	3.00	.52	.16	Fair	100	80	75
Tenn. (J. M. Buchanan)	50	..	..	..	..	.75	.20	Fair	90	100	90
Tenn. (W. L. Walling)	..	..	..	.75	..	1.00	..	Fair	75	100	75
Texas. (T. A. Bowden)	30	..	..	.45	..	.55	..	Fair	110	90	100
Texas. (J. N. Mayes)	75	.04½	..	.40	..	.45	..	Fair	100	110	90
Texas. (H. B. Parks)	25	.04	..	.35	..	.47	..	Fair	100	105	100
Vt. (P. Crane)	40	..	3.75	.70	4.12	1.10	.27	Fair	90	115	110
Wash. (G. W. B. Saxton)	20	..	..	.42	..	.49	..	Fair	100	100	100
Wis. (N. E. France)	50	..	..	..	..	.55	.12	Fair	90	..	100
Wyo. (E. C. Reed)	100	..	..	.45	..	.55	..	Fair	75	90	25

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4. Home Service Directors throughout the country will feature honey demonstrations during National Honey Week?
5. National Honey Week suggestions may be used throughout the year.
6. A copy of the Honor Roll is included in every set of honey recipes sent to homemakers and specialists.

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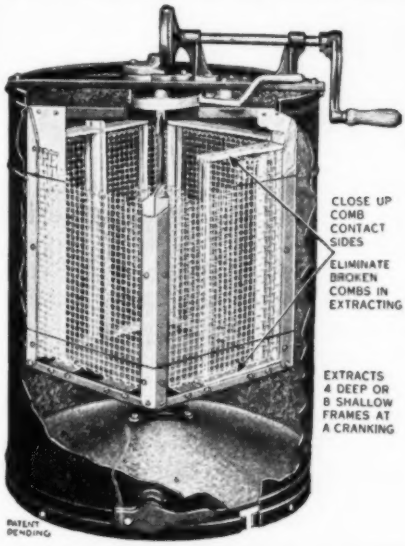
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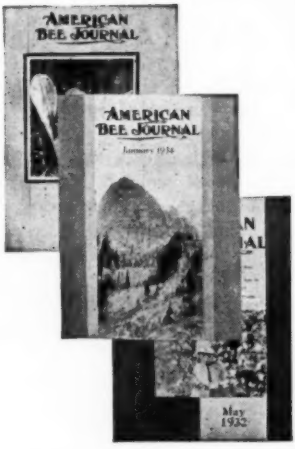

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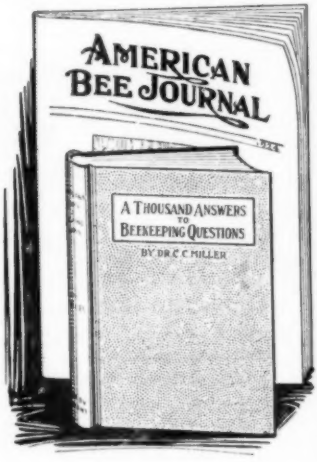

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Gleanings in Bee Culture

November
1935

Do You Take Honey Camping?

NATT NOYES DODGE

Its Wide Variety of Uses Places It Ahead of Other Sweets

For three summers the writer's work has thrown him frequently in contact with vacationists who travel in their own cars, camping out or stopping at cabin camps. This last summer, in particular, he has noticed a surprising increase in the use of honey by campers. A few years ago, the presence of honey in a camper's grub box was rare. This summer the majority of motor campers have at least a jar of the sweet, while the five-pound pail is a common sight on the camp table or among the cans in the grub box.

The greater use of honey by campers is especially gratifying in that it appears to be a natural development—a recognition of merit. For honey is an ideal campmate. The limited space for equipment and commissary restricts the camper, not only to essentials, but to such necessities as may serve a double or triple purpose. Bulky and perishable commodities are strictly "out." And common sugar is both bulky and perishable. Moisture, which inevitably finds its way into the most carefully constructed camp kit, reduces sugar to a sticky mess or a concrete-like lump. Furthermore, the very characteristic which makes sugar so popular with the housewife, its fitness for paper-bag vendure, renders it unsuitable for the camper's grub box unless repacked into a tight metal or glass container. Honey comes ready-packed in a moisture-proof, leakproof package.

"More sweetness per pound" means everything to the man who packs his food and equipment on his back.

A Three-Purpose Sweet

But there is an even greater advantage in honey for the camper; it is a three-purpose sweet. The non-honey Nomad must triplicate his sweets; sugar for his coffee, syrup for his flapjacks, jam and jelly for his bread. He who camps with honey needs but the one, thereby freeing valuable space for other items. In addition, honey is such a concentrated sweet, that far less in proportion is needed for a trip or between sources of supply.

The appeal of honey as a space saver undoubtedly has accomplished more than any of its other features toward popularizing it with the camping public. Nevertheless there is another advantage to its

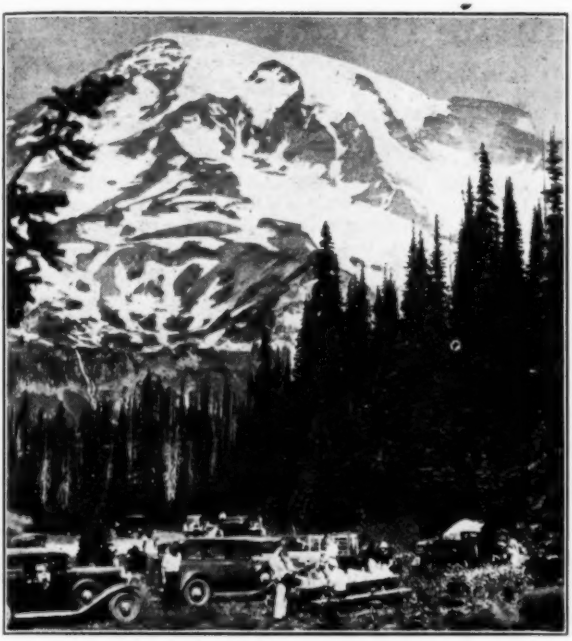
use which is of even greater value. Well-informed physicians and dietitians have long advocated the increased consumption of honey because of its various health virtues. On a camping trip, where inaccessibility of supplies, restricted cooking facilities, and other limitations result in much simpler, coarser, and heavier foods, the health angle is usually given second place to the demands of the out-door appetite. Digestive disturbances, particularly constipation, frequently mar the pleasure of the trip. The well-known ease with which honey is digested, together with its regulatory and laxative principles, makes its use by the camper especially desirable. No doubt many a camper, all unconsciously, owes the pleasure, inspiration, and rejuvenation values of his vacation to honey whose health-regulating qualities kept him free from bodily discomfort.

A family outing on the flower-clad slopes of Mt. Rainier, Washington. "Sonny" rides on daddy's back, and the whole family develops a healthy, husky outdoor appetite.

Animals Like Honey

1935 has been a record year for the number of campers visiting our national parks, of which there are now twenty-five. Second to the scenic grandeur of these great, public-owned preserves, the presence of many species of fearless, friendly wild animals is the major attraction to the visitor. To watch and take pictures of these furred and feathered inhabitants of the out-of-doors has an irresistible appeal. The confidence of many of these animals may be gained with the help of choice morsels of food and a little patience. Strange as it may seem, many species of animals like honey. Bears are notoriously fond of the sweet. Raccoons, deer, ground squirrels, chipmunks, and many other animals may be tempted by it, often eagerly licking it from a plate or saucer held in the hand. Others may be induced to approach sufficiently close to enable the amateur photographer to take snapshots that will remain a joy for many years to come. However, it must be kept in mind that some of the wild animals, especially bears, are dangerous. Such animals should never be fed from the hand, and in camp grounds where bears are even

Lunch-time in the campground. Bread and honey for a between-meals snack satisfies the mid-afternoon hunger without spoiling the appetite for the evening meal. Honey being easily and quickly digested, together with its regulatory and laxative principles, makes its use by the camper especially desirable.



Honey is making its appearance on more auto-camp tables each summer.

occasional visitors, the honey pail should be tightly closed and in the grub box when not in use. In addition, the grub box should be hoisted between two trees to a sufficient height to be well out of reach of a hungry bear standing on his hind legs. A bear is an animal readily lured by honey, but one which will not depart until all of the honey that he can possibly find has been consumed.

Honey Produces Energy Quickly

Even with the modern refinements of motor-car camping, the air mattresses, sleeping bags, good highways, and comfortable camps, there is still a considerable element of "roughing-it" to life in the open. With the gradual return of interest in climbing and hiking, camping offers an appeal to the lover of the more strenuous outdoor activities. More or less rigorous weather conditions are encountered, and the camper is certain to find a greater demand made upon his power of resistance. This is manifest by the vigorous appetite and the tendency displayed by the camper to be less particular regarding the quality and variety of his food.

Honey, with its ready digestibility and its high energy content, offers to the camper a type of food perfectly fitted to meet the varied demands of life in the open. Its wide variety of uses places it far ahead of the other sweets for convenience, while its energy values make it particularly desirable for the replacement of muscular energy lost on the trail. With the increase of roadside stands brought about by the growing highway travel, home-packed honey is readily available along any route, so that the camper may restock his larder as frequently as necessity demands. And the honey pail, when empty, furnishes an excellent container for other foods or an emergency coffee pot readily hung by the bail above the glowing coals of the wilderness campfire.

Grand Canyon, Arizona.

This antlered buck shows his appreciation of a saucer full of honey by returning daily for a generous helping of the sweet. And the young man will have a memory and a picture that he will always cherish.

An Unfinished Symphony

J. H. MERRILL, Ph. D.

The Symphony of Scientific Apicultural Research Can Not be Ended Until Man Understands the All-in-All

When we approach any problem, we are so handicapped by our preconceived opinions regarding it, that our progress in solving it is greatly impeded if not altogether prevented. The Scriptures tell us that Jesus walked on water. Some say this was a miracle while others flatly deny that it ever could have happened, simply because they themselves have never walked on water. Yet myriads of insects guided by instinct alone perform this same feat with the greatest of ease.

Bees, equipped only with the odor of a certain nectar, go to the field and locate flowers possessing a similar odor, though these flowers be three, five or, even seven miles away. Man could never do anything like this unless he were aided by road maps, route numbers, and sign boards.

Was it necessary for man to experiment in order to learn the part the wind played in the landing of an airplane? No, all that he needed to have done was to watch a bird alight, head into the wind, on a small twig, and to do it all so gently as to scarcely disturb the branch.

The behavior of insects is controlled by an instinct incomprehensible to man, and if man wishes to study their movements, he must clear up the dimness of his vision and rid himself of preconceived ideas. The measure of his success as an investigator will be proportionate to the extent of this clearing process. If he records faithfully everything which he observes and holds in abeyance his own opinions of why these things occurred until he has collected enough observations made under enough varying conditions, he will then be justified in predicting that the same behavior will always accompany the same conditions or stimuli. He may not always be able to explain why it so happened, but if he can authoritatively assert that a given response will always accompany a given condition then in truth he has made progress.

Unfinished Experiments

Thoughts have occurred to me from time to time regarding some unfinished experiments which I began when engaged in experimental work. I have often wondered what would have been the results, had these been carried on to a conclusion. I am to tell here of a few of these with the hope that perhaps someone else may find it worth while to continue investigations along these lines. Furthermore, I shall tell of some experiments which, although they seemed to have been finished, perhaps still need a great deal more work.

When I was attempting to determine the place that the physical characters of a bee play in the amount of honey it stored, controlled mating of queens was undiscovered. If our bees possessed favorable characters then it was left entirely to chance whether or not these characters would be transmitted to their offspring unless they happened to be transmitted by the queen. But, how were we to know by whom they were transmitted?

An eminent scientist once said that every scientific statement ought to be backed by at least a thousand observations. This may have been an exaggeration, but it really is not so great as one might imagine.

However, after examining 6000 individual bees, the size of the honey-stomach was found to be of great importance, and another series of experiments was begun to determine if possible whether or not this honey-stomach was an hereditary character transmitted by the queen. A queen was selected from the best honey-storing colony, and a daughter queen reared from her eggs transmitted the large honey-stomach character to her progeny. A third generation of bees was reared from this latter queen, and again the large honey-stomach was found to be a transmissible character.

Since drones do not possess honey-stomachs, the fact that the large honey-stomach character was transmitted through three generations was a hint or an indication that this character was one which would have been transmitted only by the female member of the colony. In order to have established whether or not these were the facts, it would have been

necessary to have carried on a series of experiments for a number of years, employing a large number of queens, and to have recorded many observations. Even then the best that we could say would be that our observations indicated a trend. Even though we did find that it apparently was transmitted by the queens we had no way of knowing the kind of honey-stomachs possessed by the worker-sisters of the drones that had fertilized our queens. Now that controlled mating is possible these experiments can be completed in a much shorter time, and the conclusion arrived at will be much more accurate.

Experiments on Wintering Bees

Several years ago we planned and began experiments for the purpose of determining the best methods of wintering bees. These experiments were initiated in response to a prevailing belief held by many Kansas beekeepers that there was no need for packing bees in that state because of its open winters. While this experiment was begun in response to a preconceived idea, yet there was no bias in the manner in which it was conducted. Those assistants who made the observation were carefully selected and instructed to record only what they had observed.

One applicant whom I tried to use ranked very high in all of his classroom work. When it was a question of studying and reciting upon what someone else had done, he did phenomenal work, but he had too many preconceived ideas to make a research observer. He turned in a record card one day on which he had written that "so and so had happened, which plainly proves that Dr. Blank is wrong." The next day his record showed just the opposite observation, but he failed to add that he himself had been wrong. It was no reflection on his ability as a student. His only handicap was that he always saw everything which happened in the light of what someone else had previously said. On the other hand, in the experiment of measuring the length of tongues and size of honey-stomachs of bees, I employed an observer who knew nothing about bees, but was an engineering student and one accustomed to making minute and accurate observations which was just the kind of man needed for that work.

Packing Essential, Especially During Open Winters

This experiment, extending over four years, showed that there was need of packing, of windbreak, and of ample room to take care of sufficient stores and at the same time provide space for brood-rearing. Even more significant was the fact that packing was much more necessary during open winters than in winters where the bees were confined to the hive for the greater part of the year. This repudiated the preconceived notion that it was not

Apiary at Kansas Experimental Station, where experiments were conducted.

necessary to pack bees in localities which had so-called open winters. Furthermore this finding was in keeping with the entomological axiom that an open winter is harder on insect life in general than is a hard winter.

These wintering experiments were discontinued because we felt that the larger number of bees found in packed colonies protected by a windbreak was sufficient to justify the added expense of winter protection. However, it should be borne in mind that bees need to be protected from hunger as well as from cold, and furthermore that well-fed bees can offer greater resistance against cold than can hungry bees.

Although I always felt safe in saying that bees needed protection under conditions similar to those found in Kansas, I think it may be well to re-examine these results, and to consider how universally they could be applied. J. A. Munro, in speaking of our Kansas bees as compared with bees in northern Ontario, used to say that the Kansas bees wore themselves out looking for honey long before the honey flow began. J. E. Crane observed that in Vermont a colony well supplied with honey and young bees could stand a lot of punishment.

We put a blanket on a horse to keep him warm, but we put packing on a colony of bees to insulate it against unfavorable weather. This applies to not only cold and warmth, but to any unfavorable weather, which might arouse the bees to activity at a time of the year when they were better quiet. Corkins has said that we pack our bees to protect them against warm weather rather than against cold. Our observations would seem to substantiate this claim, yet instances might occur in which it would be beneficial to the bees to be portected against the cold. As for instance, in a hive in which the honey stores were so widely separated that unless the bees were protected by insulation, they would be unable to move freely about and as a result would starve to death with plenty of honey in the hive. Properly arrangod stores in the fall would have solved this problem.

Ample Stores Essential for Wintering

In Massachusetts the winter of 1933-34 was the coldest in the history of the Weather Bureau. I personally know of bees that were housed in a large hive with frames of Jumbo depth that went through the entire winter not only without packing but also with the wide entrance of the hive unrestricted. This colony of bees was similar to a colony of bees living under natural conditions. To begin with, it was a swarm that had taken possession of this large hive and had been allowed to go into the winter with all the honey which it had stored during the preceding summer; the deep combs were similar to what they would have built in a bee tree; they had plenty of stores, and what was better still, these stores were arranged by the bees themselves. The result was that the colony came through the winter in tip-top shape, built up rapidly, and stored a very creditable amount of honey the following year. On the other hand, I have observed as severe winter losses with packed colonies in Massachusetts as I had previously seen with unpacked colonies in Kansas. The essential of packing had been complied with while other essentials had evidently been neglected.

If unmolested by man, bees usually store more honey than they actually need, and they store it in such a way that it will be accessible to them at all times. The honey is stored in combs in the central part of the hive. These are flanked by empty combs of wax which, inasmuch as they are poor conductors of heat, play the part of insulators. Wherever bees require but little winter care, they do not store so much honey in the hive for winter as in more severe climates. Isn't this a hint?

While I still believe that added insulation of a hive is beneficial under Kansas conditions, is it not possible that there are locations where, if we follow J. E. Crane's advice and provide the bees with conditions similar to those which they would naturally provide for themselves, we will have done enough? Having conducted a series of experiments to determine the value of wintering, I feel justified in asking this question. Now that honey is at its present low price, beekeepers can give their bees added winter protection at a relatively low cost.

Is it not dangerous to overemphasize any single practice? Perhaps in one locality emphasis should be placed upon a practice which can be almost neglected in another. I remember having read in an Experiment Station a report of a recommendation made by the State Apiculturist to leave twenty pounds of honey in each hive for the winter. This seemed absurdly low,

but it may very well be that he knew the needs of the bees of his locality.

It has long been said that the essentials of wintering were plenty of young bees, ample hive room for stores and brood-rearing, a windbreak as protection from prevailing winds, and hive insulation. Are these essentials everywhere necessary? Since bees always respond to the same stimulus in the same way, and since the stimuli of winter needs vary, why should not our beekeeping practices vary in keeping with the varying stimuli?

The measure of our success as beekeepers depends upon our ability to study the needs of our bees and then adapt our practices to suit these needs.

Raynham Center, Mass.

(To be continued.)

On to the Southland

E. R. ROOT

Fig. 1.—Looking over some fine saw palmetto just coming into bloom near West Palm Beach, Florida.

There are many hundreds of beekeepers in the North who will pack their bees outdoors for the winter and migrate to the Gulf States, where they can spend the winter in warm sunshine. I have run across many of these North-to-the-South beekeepers all over the Gulf states, particularly in Florida. They begin to migrate as soon as their bees are packed. Some of them take along a house trailer where they can eat and sleep at a minimum of expense. With such an outfit, they can prospect, look around, and when they find the right spot "unhook" on some public camping ground where there are many others in trailer houses. Sometimes there

Long Range Migratory Beekeeping

will be a hundred of these "houses"—a veritable little city of tourists from all over the frozen north. Electricity and water can be had at these places as well as sanitary toilet facilities. Others not liking house coops, prefer to stop at tourists' homes where they can get a room at low rates for the winter. Others take along a tent and camp out for the entire sojourn. Still others more ambitious for the comforts of home, rent flats fully furnished with bath, kitchenette and bedroom, for from ten to forty dollars a month. Mrs. Root and I found that in northern Florida we could get nice flats for twelve and eighteen dollars a month. These same kind of flats in Miami and West Palm Beach would run from thirty-five to forty dollars.

Cost of Food

Except meat and milk, food consisting of fish and vegetables are much cheaper than in the North. Fish for that matter can be caught with hook and line in the lakes and bays everywhere. So-called "western" beef can be had at about the same prices as in the North; but some of the meat and milk from those scrawny cows on the burned-over areas of north Florida I wouldn't eat. The meat is tough and the milk is thin.

Cost of Transportation to Florida

With a new flivver, the cost per mile need not be much over a cent and a half. My machine, a year-old Chevrolet, gave

20 miles to the gallon and on one recent run after covering 18,000 miles, gave 24 miles plus.

Of course, a cent and a half a mile for gas and oil does not cover overhead or depreciation of the machine, which would be nearer three cents, or four and a half total. But overhead should be charged at least to some extent to necessary bee work at home.

Cost of Hotels or Rooming Houses

The average hotel rate for two with a bath is between three and a half and five dollars. If you are fastidious, with lots of money, you can get a hotel room with bath on or near the beaches at from five to twenty-five dollars a day. I know of no beekeepers paying the latter price.

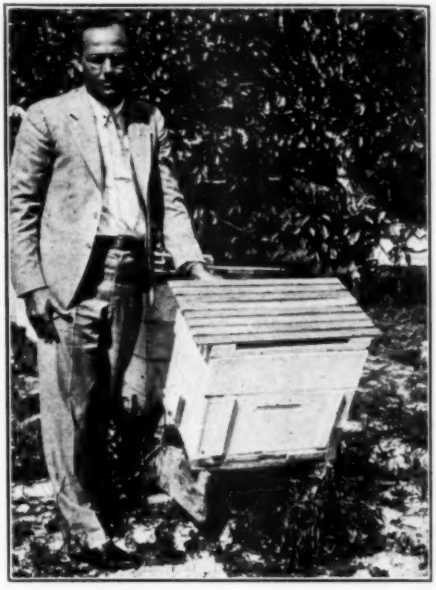
Mrs. Root and I did not, as a rule, stop at hotels. We went to rooming houses or cabins at a dollar or not over a dollar and a half per night, for the two of us. By the week or month we could get them for much less. As a rule, the small towns furnish rooms or flats for much less than the cities. The rates at Tampa, however, the second largest city in Florida, remote from bays, are very low—flats fully furnished from ten to twenty-five dollars per month. Close to the water's edge, be it a lake, bay or gulf, the rates are much higher.

Cost of Fuel

The fuel is usually fat pine and even in mid-winter a fire in a small stove is needed only in the morning and sometimes at night. The fireplaces, and they are common, use, of course, more fuel. No heat is needed generally during the middle hours of the day, even in the coldest part of the year.

In some cases the difference in the cost of fuel between the North and the South would about cover the cost of rooms or flats in Florida. The difference in the cost of food, either home cooked or at restaurants, will nearly cover the cost of gasoline and oil in drivng South in a flivver.

Taking it all in all, a beekeeper can spend the winter in the South, keep a few bees, hunt and fish, take on a new lease of life and a good tanning for no more than it would cost him if he stayed North, shoveled in coal or wood and suffered stinging cold when he left the house. We are learning now that sunshine performs miracles of cure when it can reach the skin. You would think so if you could see the thousands at the beaches basking in the sun. Who sent them? The family physician who prescribed sunshine and lots of it; but, say, take it gradually—not at one dose of an hour, or you would wish you had never seen a beach or a doctor. A badly blistered body from too much sun at the start is just as serious as the same condition from a flame of fire. To start with, take a sun bath for no more than 20 minutes, gradually increasing the time



Mr. DuBois tips up the hive to show the shade board made of laths.

but never to a blister. Soon you will be in the height of fashion—with a nice coat of tan.

You can get that tan at any of the beaches on the Gulf or on the Atlantic from St. Augustine to Miami. At West Palm Beach and Miami you can see literally thousands taking their sun baths; other thousands splashing through the surfs. So much for tan health and the beaches of Florida.

How about Miami and West Palm Beach for bees and honey? I am frank to tell you that there are not as many bees and beekeepers there as further north where the palmettoes and the orange trees abound.

There are quite a crowd of beekeepers in and around Miami and in the Everglades, but not many in West Palm Beach. At neither of these two cities are there any orange groves.

Fig.2. — The DuBois pleasure resort, where there is bathing, boating and fishing. It would make a fine place for a bee convention.

Fig. 3.—Neil DuBois standing in front of large-size saw palmetto near his extracting house, shown next.

Fig. 4.—The DuBois extracting house where there is modern equipment for extracting and straining the honey.

Fig. 5.—Mr. DuBois and one of his characteristic apiaries. Mr. DuBois says his locality will not support a large number of colonies in one place. He uses shallow brood nests for brood as well as honey.

Saw palmetto is luxuriant as you will see in Figs. 1 and 3. The most prominent beekeeper in this district is Neil DuBois, whose headquarters are at Jubiter, a light-house station and a resort about 20 miles north of West Palm Beach. About 25 years ago I called on his father, Harry DuBois, who had something like 700 colonies up and down the coast, and up the Loxahatchee River. After the father died the management of the bees fell to his youngest son, Neil. He has a modern extracting house and a complete extracting equipment, as will be seen in Fig. 4. Mr. DuBois is shown again in Fig. 3, showing the luxuriant growth of saw palmetto, which is as fine as I have seen anywhere in Florida. In Fig. 5 he is shown again sitting by one of his small yards of bees. He has decided that for his locality with no orange bloom that 40 or 50 colonies are quite enough for one yard.

At one time Mr. DuBois strained himself in lifting and he is now working over rapidly to shallow brood chambers, both for brood nests and supers. These he can lift easily, and besides he says it is much easier to jounce the bees out of the shallow extracting supers when the honey is ready to come off. I quite agree with him in that for many people, women and old people, the shallow hives are much easier to lift and handle than the full-depth supers full of honey weighing from 60 to 75 pounds.

Their Scheme of Shade

His father, Harry DuBois, when I visited him some 25 years ago, had a scheme of shading by having an overhead trellis of lath spaced two inches apart to give partial shade to his apiaries. A solid shade, he contended, was too much of a good thing; but by spacing the lath apart he broke up the sun's rays enough to shut off the full glare of the sun.

The younger Mr. DuBois has adopted the same scheme of breaking up the sun's rays but instead of having an overhead trellis, he has individual shade boards made up of slats spaced apart as shown on page 656. This scheme costs much less, he says, and screens the hives from the full rays of the sun quite as well.

Mr. DuBois has a unique scheme of disposing of his honey. He sells his best or light palmetto honey (and it is as fine as any clover honey) to his mother. She puts it up in bottles and distributes it to groceries over West Palm Beach and vicinity.

I said to Neil DuBois: "Wouldn't you do better by moving further north where you could get both orange and palmetto?"

"Yes, perhaps," he replied, "but I can move into the Everglades and besides I am in the business of producing ferns, also." He and his brother operate, each of them, fern farms, from which they ship ferns for decorative purposes all over the North. Fig. 6 will show how the ferns are shaded by slats for breaking up the rays of the sun the same as Harry DuBois did years ago with his bees.

Fig. 6.—Neil DuBois and his brother are in the business of growing ferns which are shipped North. The overhead is made up of spaced slats to break up the sun's rays.

By the way, if any of you beekeepers contemplate visiting West Palm Beach, hunt up Mrs. Harry DuBois, whose bottled honey is all over the city. She has a number of flats north of town that are very reasonable in price compared with those uptown and south of town. The DuBois are as fine people as you will find in all Florida.

Mr. DuBois' brother operates a pleasure resort, a part of which is shown in Fig. 2. One can spend an afternoon or a whole week and enjoy boating and fishing. The finest pompano fish that formerly brought a dollar a pound are caught here. Mrs. Root and I indulge the hope that sometime we can spend a week at the DuBois resort, fish and rest and forget bees for the time.

Medina Ohio.

Wintering Bees

C. H. GILBERT

Comparison and Results of Methods Conducted by the University of Wyoming Experiment Station at Laramie

Colonies ready to be placed in cellars. Note the colonies are locked with log chains.

(Continued from October)

During the early years of the experiment many colonies were wintered without protection. The winters were very severe with temperatures dropping below zero many times. The results were heavy losses, and the surviving colonies were in a weakened condition. In recent years, with the mildest winters on record, the loss has been very light, and colonies have wintered in fine condition. Wintering without protection is particularly dangerous during long, protracted cold spells, the weather being too cold to permit the bees to break cluster to get honey. Unprotected bees can successfully withstand cold spells of short duration. It is the long, unusual cold spell that causes heavy losses. Since there is no way of predicting weather conditions, it is a wise precaution to provide a certain amount of winter protection. Bees may be wintered successfully without protection during mild winters, but an unusually bad winter may cause a very serious loss.

Shed Wintering

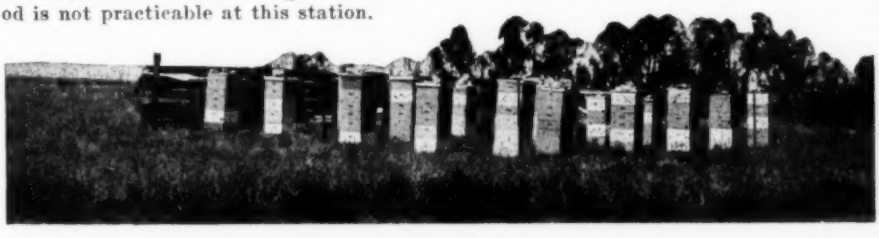
Colonies wintered in the shed suffered greater loss than the ones in either the tar paper or sawdust. The inconvenience of watching the weather and opening the doors is a serious disadvantage. This method is not practicable at this station.

Sawdust Packing

Colonies packed in sawdust have wintered satisfactorily. However, considering the cost of packing materials, the labor charges, and the winter loss, this method has proved to be second to tar paper packing. The loss in sawdust packing has never been greater than 12 per cent, and, for the past two years there has been no loss. The sawdust packing used protects the colony very well during the winter, but it also insulates the bees from the sun in the spring, and tends to retard brood rearing. The presence of moisture and frost in the sawdust tends to keep the colony too cool in late spring.

Tar Paper Packing

This method of packing has proved to be the most successful method tested at this station. The loss in tar paper packing has never been over 10 per cent, and the last two years colonies wintered 100 per cent and were in fine condition. The insulation provided by the building paper and tar paper is ample to protect the colony during the winter, while in the spring the colonies are benefited greatly by the warm rays of the sun. The packing insulates the hive from the sun to some extent, but not as much as the sawdust pack-



Thirty-five colonies were used in the experiments.

ing. Despite the fact that the tar paper packing is practically airtight and only a reduced lower entrance is used, condensation of moisture has not been a problem. All factors considered, this is the best method of wintering bees tested at this station.

Cellar Wintering

Cellar wintering of bees has been studied at this station for the past five years. The results of each year's experiment is given below:

1930-1931

No. of cellars....1
No. of colonies....20
Temperature control....None
Forced ventilation....None
Temperature, cellar....42-48° F.
Condition of surviving colonies....Good
Stores consumption....Low

Winter Loss

Sawdust packing....10%
Tar paper packing....9%
Cellar....15%

1931-1932

No. of cellars....2
No. of colonies....40

Winter Loss.

Tar paper packing....5%
Sawdust packing....8%

Cellar No. 1 (Warm)

Temperature....46-50° F.
Forced ventilation....None
Winter loss....15%
Condition of colonies....Fair
Stores consumption—higher than No. 2.

Cellar No. 2 (Cold)

Temperature....38-46° F.
Forced ventilation during cold weather.
Winter loss....5%
Condition of colonies....Good

1932-1933

No. of cellars....2
No. of colonies....40

Winter Loss

Tar paper packing....10%
Sawdust packing....12%

Cellar No. 1 (Warm)

Temperature....48-50° F.
Forced ventilation....None
Winter loss....62%
Condition of colonies....Weak
Stores consumption....High

Cellar No. 2 (Cold)

Temperature....36-46° F.
Forced ventilation in cold weather.
Winter loss....16%
Condition of colonies....Fair
Stores consumption....Fair

1933-1934

No. of cellars....2
No. of colonies....40

Winter Loss

Tar paper packing....None
Sawdust packing....None

Cellar No. 1 (Warm)

Temperature (natural temp.)....44-54° F.
Forced ventilation....None
Winter loss....22.20%
Condition of colonies....Weak
Stores slightly higher than in No. 2.

Cellar No. 2 (Cold)

Temperature (cooled)....42-46° F.
Forced ventilation during cold weather.
Winter loss....11.1%
Condition of colonies....Fair

1934-1935

No. of cellars....2
No. of colonies....40

Winter Loss

Tar paper packing....None
Sawdust packing....None

Cellar No. 1 (Warm)

Temperature, natural, no heat....44-54° F.
Forced ventilation....None
Winter loss....31.6%
Condition, weak, four colonies extremely weak, but queenright.
Consumed slightly higher than No. 2.

Cellar No. 2 (Cold)

Temperature, cooled....42-46° F.
Forced ventilation during cold weather.
Winter loss....21%
Colony condition....Good

In interpreting the above results, it should be remembered that the first two winters were cold, while the last three were unusually warm for this country.

No attempt was made during these experiments to control circulation of air through the hive by removal of the top or bottom. Standard ¾ entrances were used,

This shows the set-up for taking colony and cellar temperatures. The switches are compact and permit rapid readings.

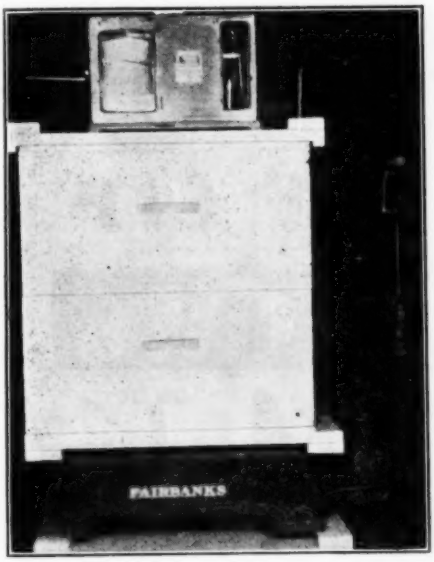
and various size openings were provided by means of blocks. Every year the bees in the cold cellar wintered with less loss, consumed less stores, and the surviving colonies were in better condition than those in warm cellars. Excessive honey consumption, heavy winter losses, and weakened condition of all colonies wintered in the warm cellar indicate that temperatures of 48° F. or above are too high for wintering bees in cellar. From available data it seems advisable to hold the cellar temperature at 40° F. or below. Cellar temperatures should be low enough to reduce cluster activity to a minimum. At Laramie it has been impossible to get a cellar too cold even with refrigeration and forced ventilation.

Colonies packed in sawdust and tar paper have not only wintered in better condition and with less loss, but each year the production records have shown that they produced more honey than cellar win-

tered colonies. The difference has been very striking during the past three years.

This past spring season was late and cold, and the weak cellar colonies built up very slowly. There was a splendid dandelion honey flow, but they were too weak to take advantage of it. The tar paper and sawdust packed colonies were full strength and took full advantage of the dandelion flow. This gave the packed colonies a decided advantage over the cellar wintered colonies, and the production records show this in a striking manner.

There are many disadvantages to cellar wintering which have been noted each year during this experiment. When colonies are prepared for winter in late September, the tar paper and sawdust packed colonies are placed in winter quarters and have full winter protection from fall to spring. The cellar colonies are left without protection during all the fall storms. In the spring, the bees in the cellars become restless and must be taken out early in April. They are placed out of the cellars without protection and are in no condition to withstand the severe spring snowstorms. This year the colonies were removed from the cellars on April 9. Four hours later it began to snow and for two days a blizzard raged.



This shows a scale colony in position in the cellar. The hygrothermograph is shown on top of the hive.

Cellar colonies are unprotected for three months when protection is badly needed. They are in the cellar a little over four months, and the other colonies are packed for more than seven months. This is important, because fall and spring storms are often very severe. When the cellar colonies are set out, they are not prepared to protect themselves and are an easy prey for robbers. Having been in darkness for a long period where hive protection was not necessary, it requires a few days for them to become adjusted to the new condition. During this time they should be watched carefully and the entrances should be reduced.

When bees die in the cellars, the combs may become very mouldy and are not readily accepted by bees. This condition is probably caused by the dampness of the cellar and the decomposition of dead bees. It is often necessary to wash the combs before bees will use them.

Another serious phase of cellar wintering is the fact that there is so much at stake in a cellar. If anything goes wrong, all the colonies are affected. A fire or unusual disturbance in a cellar would cause a very serious loss to the owner.

Wintering bees in cellars requires more time and attention then when packing is used. Bees can be packed in late September or October and require no further attention until the following April or May. Cellar bees can not be put in until November, and must be taken out in late March or April. In some localities the bees are taken from the cellars in early March for a flight or for feeding and put back into the cellars.

One important advantage in favor of cellar wintering is the elimination of spring robbing of diseased colonies that have died during the winter. Dead or very weak colonies should not be taken from the cellars. In order to prevent pilfering, all cellar colonies on these experiments were locked with log chains.

From the results obtained at this station, cellar wintering is not as successful as either tar paper or sawdust packing.

Laramie, Wyoming.

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Honey Broadcast on November 13

Mrs. Jensen, of the American Honey Institute, announces the receipt of a wire from Gold Medal Foods, Inc., to the effect that reference to National Honey Week will be made by Betty Crocker over a national network on November 13.

Lesser vs. Greater Wax-Moth

V. G. MILUM, University of Illinois

Combs Should be Protected from These Pernicious Pests

For a number of years the writer has felt that there has been prevalent some false impressions concerning the present distribution of the lesser wax-moth, *Achroia grisella* Fabr. Beekeepers have told the writer that they were sure it was present in their localities, but very few could give any definite information. Samples submitted from two widely separated points of the United States proved to be not the lesser but the greater wax-moth, *Galleria mellonella* L.

Not until the Valdosta meeting in December, 1934, did we find anyone confident of his identification of the lesser wax-moth infestation who was willing to provide us with specimens. We are indebted to Dr. David Dunavin of Clemson College, South Carolina, who kindly sent us living larvae from which adults were reared and later identified by Dr. Carl Heinrich of the United States National Museum as the lesser-wax-moth, *Achroia grisella* Fabr. We are also advised that the above museum has specimens of the lesser wax-moth from Washington, D. C., Somerset, Berwyn and Plummer's Island in Maryland; Fairfax Co., Virginia; Chicopee and Amherst, Massachusetts, and Jefferson, Ohio, as well as several foreign counties.

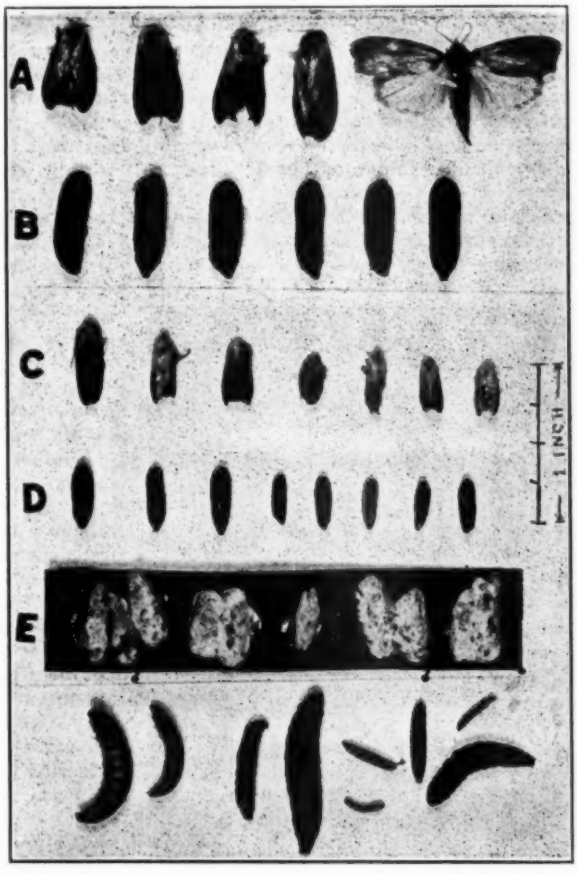


Fig. 1.—Life stages of the greater wax-moth, Galleria mellonella L. A. Normal-sized adult moths, 3 males at left, 2 females at right. B. Normal pupae removed from cocoons. C. Adults reared on reduced food supply. D. Pupae of same removed from cocoons. E. Cocoons. At bottom, normal larvae of various sizes. In reproducing this picture the size of the moths and larvae were reduced in the same proportion as the inch at the right is reduced.

In previous articles (Jr. Ec. Ent. 28: 576-8; Ill. St. Assn. Rpt. 1933-34:80-82) Milum and Geuther reported observations tending to confirm the contention that damage on comb honey at least in the northern states was generally due to an infestation of the larvae of the greater wax-moth. Our attention was first directed to this a number of years ago when a beekeeper presented us with two larvae approximately ⅜ inch in length taken from tunnels on the surface of section honey. Not being able to identify them at that time because of our unfamiliarity with the habits of the lesser moth, as we will here describe, we placed them on diets of section honey and brood comb re-

spectively. The latter with its proper food developed into a full-sized adult male greater wax-moth (females can be identified readily by the two short finger-like palps or processes projecting from the front of the head. See Fig. 1-A, female with wings spread.) The former larvae on its comb-honey diet grew smaller and smaller and eventually died. Needless to say, we can now distinguish the larvae by the type of tunnels in which they live, the pupae by their size and shape and their freedom from frass, and the adults by their general appearance including color and body shape.

Other normal larvae taken from brood combs were placed upon comb honey as their sole diet. Only the larger larvae pupated and emerged as adults, while the smaller ones grew smaller and eventually died. Insufficient observations do not permit us to indicate whether such larvae, having reached a certain instar, are able to continue their development, but such seems to be the case.

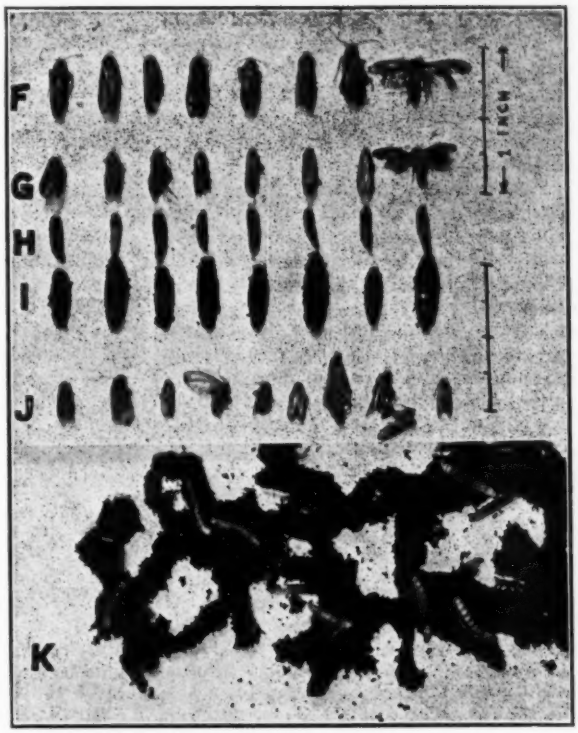


Fig. 2.—Life stages of lesser wax-moth, Achroia grisella, Hubner. F, Normal adult females. G, Adult males. H, Pupae removed from cocoons. I, Cocoons covered with frass. J, Smaller males and females reared on reduced food supply, incuding two mating pairs at right. K, Larvae and larval tunnels in which larvae are normally found. This picture is reduced in proportion.

Scant Food Supply Stunts Growth of Greater Moth.

On the other hand, it is quite common observation that when a certain group of moths are allowed to feed upon a limited supply of brood combs, the first one or more generations of adults will be of normal size, but as the supply of available food diminishes, the succeeding generations become smaller and smaller. The difference in size is, no doubt, due to the lack of sufficient food supply for growth of the larger individuals, yet allowing for completion of the life cycle, the adults of which seem to be able to reproduce normally if a new food supply is given.

We have been able with a h avy infestation on a small supply of food to rear adult greater wax-moths, one female $\frac{7}{16}$ of an inch in length, whereas the normal female adults are approximately $\frac{5}{8}$ of an inch in length with a wing expanse of $1\frac{1}{4}$ inches. Thus as will be noted by observing the photographs, these abnormal or small sized individuals of the greater wax-moth (Fig. 1-C) are smaller in length than the normal females (Fig. 2-F) of the other species, the lesser wax-moth, which is about $\frac{3}{8}$ of an inch in length. The normal males (Fig. 2-G) of the latter are about $\frac{5}{16}$ of an inch in length. As with the greater wax-moth smaller adults (Fig. 2-J) of the lesser wax-moth can be reared on a decreased food supply which contains some of the elements necessary for growth. We believe that this condition accounts for some misunderstanding regarding the reported distribution of the lesser.

In the course of our investigations we have noted that individual females of the greater wax-moth laid from 400 to 839 eggs or an average of 754 for each of 12 individuals counted. Is it any wonder that serious damage results from an original

infection of only a few larvae or eggs on a group of combs stored in the honey-house at temperatures favorable for development?

It was also observed that the female greater wax-moth preferred to lay her eggs in the tiniest cracks and crevices which barely admitted her ovipositor, as many as 127 eggs being deposited in one group. When submitted to tests wherein the females were released in a box containing pieces of brood comb suspended on nails supported by sections, the females nearly always selected the crevices between the pieces of section and the bottom of the container in preference to the comb itself. The only eggs ever found on the combs under these conditions were a few deposited between the bee larval cocoons and the waxen cell walls where the combs had been slightly broken.

At about the same time that we received our first living specimens of the lesser moth, our attention was directed to an extensive article by George Kunike in *Zeitschrift fur Angewandte Entomologie*, Vol. 16:305-356, 1930, on the biology of the lesser wax-moth. Those interested in an extensive description with several good photographs should consult same. A few of his observations will be repeated here with credit given to him in each case. Otherwise the statements are as a result of our own observations. (We wish to acknowledge the kindness of B. D. Burks, of the Department of Entomology of the University of Illinois, in the translation of certain portions of the article mentioned.)

The adults of the lesser wax-moth are silver gray in color as compared to the mixed or mottled brown and gray of the greater wax-moth. The under pair of wings of the latter are creamy white in color while the two pair are quite similar in the lesser. When at rest the lesser appear to have an elongate flattened shape, while the greater is somewhat more plump or boat-shaped with the tip of the wings forming a sharp angle at the top where they meet.

Identification of Sexes

In a given culture the female adults can be distinguished easily by their larger size. They are approximately ⅜ inch in length (front of head to rear tip of wing), with a wing expanse of slightly more than ⅝ of an inch, while the normal sized males are approximately $\frac{5}{16}$ of an inch in length, with a wing expanse of slightly more than ½ inch. Smaller adults occur with reduced food supply. With such individuals the females can be identified by an examination which will show the presence of a pair of palps almost hidden from view beneath the head and thorax. The wing venation and genetalia also serve as a means of identification from other species.

Kunike among other things reports that the male moths have an average life of 23 days and the females 7 days. He states

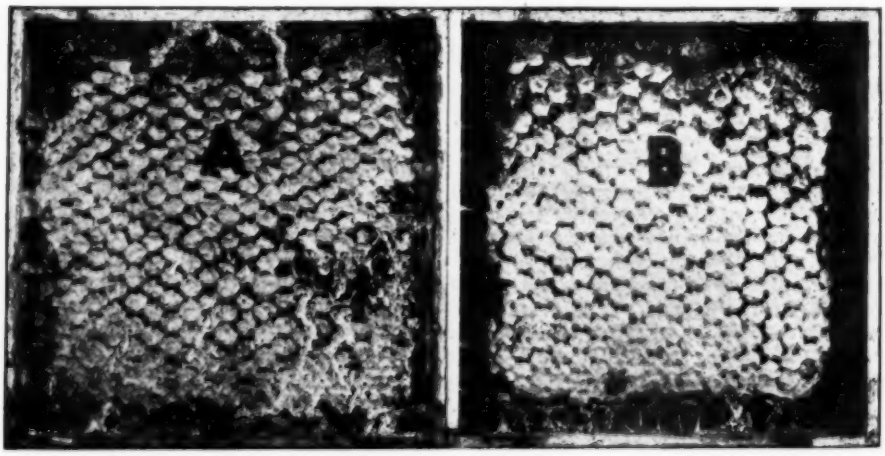


Fig. 3.—Injury to comb honey by wax moths. A, By the greater wax-moth larvae, on sections removed from supers and stored in a room not accessible to adult moths. No other adults developing. B, By 50 larvae of the lesser wax-moth (size ¼ mm.) taken from brood comb. Note that there is very little injury on the comb surface. See accompanying description.

that the males produce a strongly perceptible aromatic odor, spread by fanning the wings, which attracts the females, it being thus possible to trap the females by arranging a trap in the hive with males within the cage or trap.

Within a few hours after mating the female (one less than 5 hours) starts laying the tiny white eggs in groups in minute cracks and crevices if available by inserting her slender ovipositor and depositing a large mass at one point if it is satisfactory. By placing within the cage pieces of sections partially split with a knife blade, we were able to obtain large numbers of eggs free from debris. Although the female prefers and seeks out these crevices which barely admit her organ, she will lay on the debris and other material within the cage. The greater portion of the eggs are laid by the female during the first one or two days after mating. Kunike says that the number of eggs per female is from 250 to 300, although as many as 460 have been deposited. He found that at 86° F. (30° C.), eggs hatched in 5 days, at 68° F. (20° C.) after 10 days, and at 60.8° F. (16° C.) after 22 days, while above and below these temperatures, the eggs do not hatch but are killed. He says that the larvae are the overwintering stage since they can withstand all temperatures from 30.2 to 96.8° F. (-1 to 36° C.) This would indicate that combs stored at low temperatures would be free from lesser wax-moth infection and is one of the reasons why this pest has apparently not been able to establish and maintain itself in our colder states. Kunike also suggests 25-30° C. (77-86°F.) as the optimum temperature for development.

The Larval Stage

Soon after hatching, the larvae start building individual tunnels of silk thread covered with frass or excreta, wax and particles of comb in which they live, but from which they extend their heads and even their bodies to secure food. While these tunnels may be in close proximity to each other in cases of heavy infestations, each larva tends to have its own individual tunnel, a distinct difference from that of the larvae of the greater wax-moth which tend to congregate.

When an individual larva has ceased feeding it generally extends its tunnel outside of the food mass and at the point of pupation builds a tighter case, cleaning up most of the approaching tunnel and its adhering frass which is thickly attached over the surface of the cocoon, giving the same a hard compact covering. These cocoons are about ½ and ⅜ inches in length respectively for females and males. Before actual transformation the larva like that of the greater wax-moth slits the ends of the cocoon to allow for emergence of the adult.

The younger larvae of the lesser wax-moth will roll up in a ball if they are shaken from a comb or dropped from the rearing cage or are prodded or shaken. Kunike observes that this is true of only larvae in the first or second instar. The larvae of the lesser moth like those of the greater moth are very sensitive to light.

The larvae of the lesser wax-moth seem to prefer as food the portion of the brood comb next to the midrib as in some cases pieces of brood comb in the rearing jars were split or severed almost completely into the two halves of the comb. This is probably due to the greater amount of the protein in the waste materials deposited by the bee larvae at the base of the brood cells just before spinning of the worker cocoons. Kunike reported that the larvae could not be reared on pure rendered beeswax, or pollen direct from flowers or honey or dead bees, but could be on wax-free pollen from storage cells while smaller individuals were produced when compelled to eat honey with brood comb. These observations have not been checked except that we were unable to get larvae to feed upon dead bees. In case of a slight shortage of food smaller individual adults were reared but with a heavy infestation of larvae on a small amount of food growth took place very slowly or not at all with some evidence of cannibalism since occasionally there were one or two larvae of much greater size than the remainder of his or her brothers and sisters.

Time Required for Development

We have not conducted any controlled experiments on the total length of time required for a generation of the lesser wax-moth but apparently under ordinary laboratory conditions it is approximately two months with variation due to temperature and availability of food, which does not show much variation from the time required for the development of the greater wax-moth.

Because of the reported damage to comb honey by the larvae of the lesser wax-

moth, an attempt to rear them on comb honey was made. We first placed a piece of split section wood containing a total of 192 eggs on a section of comb honey on March 12. All eggs had hatched by March 18, at which time only three larvae were visible in the container and they were not upon the comb surface but upon the bottom of the container beneath the section. Each succeeding examination indicated no attraction to the comb honey, even though we transferred the larvae to the comb surface. It was not until April 10, more than three weeks after hatching that the largest of the three larvae now only 2 millimeters or slightly more than $\frac{1}{8}$ of an inch in length was found to have constructed a flimsy case next to the section wood on the margin of the comb attachment while the two smaller larvae were still wandering about. Within the next five days only one small larvae could be found and it disappeared within the next two weeks. Death from starvation was the apparent result because of lack of proper food materials for growth.

We next transferred 50 larvae varying in size from 1 to 4 mm. (up to $\frac{1}{4}$ inch) in size on to another section of undamaged comb. An examination 17 days later showed only 4 larvae tunneling in the cappings of the comb surface, 8 in tunnels about edges in attachment cells and 4 larvae in the bottom of the container. A week later only one larva was found in the comb surface, 5 in the edges near section wood and 5 larvae in the bottom of the container. Eventually all disappeared, leaving the section of honey with only slight damage as shown in the photograph. (Fig. 3-B) of damaged sections.

In cases of slight infestation we believe it unsafe to name the insect causing the damage on comb honey by an examination of the section. However, we believe that sufficient evidence has been presented to support our belief that injury on comb honey is often incorrectly laid to the lesser wax-moth and that the smaller greater wax-moths are sometimes miscalled the lesser moths. In other words a moth that may, under certain conditions, complete development with a reduced food supply can not be correctly identified by its size. Another frequent error is the supposition that wax-moths fly toward and hover about lights. Some moths do this very thing but very seldom the kind of moths we have been describing in this article.

The statements regarding the egg laying habits of the females of the two species would indicate that combs taken from strong as well as weak colonies are subject to later attack and damage by the larvae which may have or later may hatch from the eggs laid in the cracks and crevices of the hive and then crawl in and on to the surface of the combs. In fact, some of the smallest larvae of either species may be on the combs before they are removed and not be detected by the bees until they attempt to tunnel into the combs. It is, therefore, necessary to take the necessary steps to destroy by fumigation with carbon bisulphide, sulphur or cyanide any such larvae followed by a second fumigation to destroy the later hatching larvae. In fact, we have recently heard of damaged comb honey (the greater wax-moth, of course) even though the sections were removed immediately from the supers and wrapped in cellophane.

If any of the readers of this article find specimens of the lesser wax-moth in their localities, the identification of which they are positive, the writer would appreciate receiving a report of same. Likewise, we will gladly identify any specimens of wax-moths if samples are submitted.

Urbana, Illinois.

Stingless Bees from Central Mexico

R. L. USINGER

A Graduate Student of the University of California Finds Them Gentle and Harmless

Stingless bees have attracted a great deal of attention since the time of their discovery by the early travelers. There is something about them which appeals to the imagination of the harassed beginner as well as the experienced beekeeper, both of whom would welcome the freedom from annoyance suggested by such creatures.

Most of the early voyagers, such as Dar-

win in his "Voyage of the Beagle," and Bates in his "Naturalist on the River Amazon," mentions stingless bees in a cursory manner. More recently Cockerell, Sandhouse, and Schwarz have devoted themselves to a systematic study of the group while the wealth of experience and delightful style of the two foremost students of social insects* have been applied to their biology.

To this store of knowledge may be added a few notes on the collections made by H. E. Hinton and myself in the District of Temascaltepec in the southwest corner

The stingless bees were finally located in this box hive set on top of the hollow tree trunk. The bees were extremely gentle and were gathering a deliciously mild white honey.

of the state of Mexico. Observations were made near the villages of Real de Arriba and Temascaltepec, approximately 6000 feet elevation, which are accessible only by foot or on horseback. The specimens collected have very kindly been determined by Dr. Herbert F. Schwarz at the American Museum of Natural History.

The first species collected was the very common *Trigona testacea cupira* (Smith) which is widely distributed in the American tropics. Nests were observed on rocky cliffs attached in crevices near exposed roots. One of these was in a very exposed situation about ten feet from the ground. The nests were elongate, resin-like or pitchy masses and were dark brown in color. The nest material, cerumen, was of doubtful and perhaps rather disgusting origin as these bees have filthy habits.

Additional specimens of the above and a few specimens of the small, less common and rather local, light brown species, *Trigona hellwegeri* (Friese), were collected out on a rocky island in the midst of the Rio de Temascaltepec near El Tule. They were apparently seeking moisture, since they clustered on a moist gravel bank near the water.

Of more interest, however, was the domesticated colony of what Dr. Schwarz considers to be an undescribed subspecies of *Melipona fasciata*. For several months we had been enjoying a delicious, water white, fairly heavy honey supplied by the natives. Investigation soon led us to the hive which consisted of an old hollow trunk of a tree which had been sawed off and moved to a position near the doorway of a house. The stump was about a foot and a half in diameter by four feet high and had an entrance hole about two feet above the ground. A "super" about a foot high and nine inches wide was placed on top and closed the hole of the upper end of the log.

The bees emerging from the entrance hole were at first collected cautiously and later with abandon in our cupped hands. They are beautiful large bees slightly over ten millimeters in length, light brown in color, and with a densely hairy thorax. They are quite suggestive of our cosmopolitan honeybee, especially in flight, but are absolutely harmless. They made no attempt to bite, their disposition being as sweet as the product of their labors, the so-called "miel virgen."

Removing the cover of the "super," honey pots were revealed at the bottom. These wax pots, sacs, or vats were about one inch in diameter and were about half full of honey. Extraction is not difficult as the honey is simply poured out of the honey pots. At the time of our visit, toward the middle of July, the rainy season had been in progress for only about three weeks. We were told that in October the "super" is filled with honey, about three liters being extracted each year. The brood was all confined to the tree trunk and thus inaccessible.

Davis, California.

*1. Wheeler, W. M. 1923. Social Life Among the Insects. pp. 121-130.

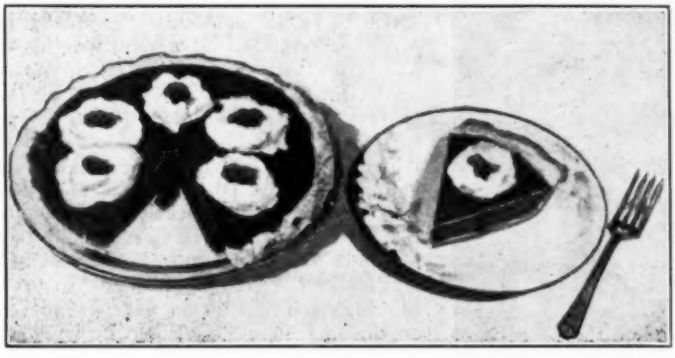
2. Rau, Phil. 1933. Jungle Bees and Wasps of Barro Colorado Island (Panama). Chap. 1, pp. 14-38.

From the Field of Experience

HONEY PUMPKIN PIES

Unusual Crusts Add Variety to This Delicious Dessert

Pumpkin pie is usually associated with Hallowe'en or Thanksgiving. With canned pumpkin easily available throughout the entire year, this nutritious, delicious pie may be made at any time. Perhaps it will be made and enjoyed more often, at least among beekeeping folks, when they try making it the honey way. For making pumpkin pie with honey gives it just that different, pleasing flavor that calls for the second helping.



A pumpkin pie fit for the gods.

This kind of pie lends itself readily to a number of different crusts adding pleasing variety, though the same filling recipe is used. One may add grated cheese to the usual favorite pie crust dough, then bake as usual.

Cereals have invaded new fields and we find a delicious crust, quite a bit out of the ordinary, which is made by combining 4 cups of corn flakes which have been put through the food grinder, using the smallest cutter, with ¼ cup sugar, ¼ cup melted butter and ½ teaspoon cinnamon. Mix thoroughly, pat very firmly into the pie pan and bake in a moderate oven for 10 minutes.

Graham cracker pie crust is a happy addition to any pie and particularly to honey pumpkin pie. For one crust for a nine-inch pie you will need: 1½ cups graham cracker crumbs, ⅓ cup powdered sugar and ½ cup butter. Crush graham crackers very fine and mix thoroughly with butter and sugar. Pat the mixture firmly into pie pan. Place in refrigerator or other cold place and allow to stand for several hours before pouring in filling.

A gingersnap crust makes a snappy, delicious shell and blends delightfully with the pleasing flavor of the honey way pumpkin filling. This crust is made in the same manner as the graham cracker crust but a little less sugar is necessary, varying, of course, according to personal taste. Be sure the crumb crusts are very firmly patted into the pie pans and chilled so they may not be crumbly when cut. These last two crusts are used only when a precooked filling is used.

For the filling, a more pleasing flavor is obtained by using a mild flavored honey. If you prefer to bake your pie in the usual way, line your pie pan with your favorite pastry, adding grated cheese, if you desire, or you may use the corn flake crust mentioned above.

Then assemble 1½ cups freshly steamed, strained pumpkin or canned pumpkin, 1 cup honey, 1 teaspoon cinnamon, ½ teaspoon ginger, 3 eggs, ½ teaspoon salt, 1 cup milk and ½ cup cream.

Combine honey and pumpkin, then add salt and spices. Beat eggs until very light, add milk and cream and combine with pumpkin mixture. Pour in pastry lined pan and bake 60 minutes in a moderate oven of 350 degrees F.

In the summer time or when preparation time is limited the use of gelatin results in a delightfully firm-textured pie, requiring very little cooking. With this type the graham cracker or gingersnap crust is used. Or, if one prefers, a previously baked pie shell.

Pumpkin Chiffon Pie calls for: ¼ cup cold water, 1¼ cups pumpin, ½ cup milk,

½ teaspoon each of cinnamon, ginger and nutmeg, ¾ cup honey, ½ teaspoon salt, 1 tablespoon gelatin and 3 eggs.

To slightly beaten yolks add the honey, pumpkin, milk, salt and spices. Cook until thick in a double boiler. Meanwhile pour cold water in a bowl and sprinkle gelatin on top of water. Add to hot pumpkin mixture, mix thoroughly and cool. When this mixture begins to thicken fold in stiffly beaten egg whites. Pour into previously baked crust or cracker crust and chill thoroughly in refrigerator or cold place.

When ready to serve either type of pie, place a spoonful of whipped cream very slightly sweetened with honey on each cut section, hollow out a small place in the center of the cream and in this place a spoonful of honey. You will have a serving appealing to the eye as well as tempting and satisfying to the appetite! —Mrs. Benj. Nielsen, Aurora, Nebraska.

A WORD ABOUT WINTERING BEES

Ordinary Cheap Roofing Paper Makes Splendid Winter Protection for Bees

I have tried various ways of wintering, and have found what I consider the cheapest, most convenient and efficient way, and which I have used for several years. I use the deep hives, but the method may be varied to suit the ideas of the individual user in his own manner of wintering. I get the ordinary roofing paper, the cheap sort, costing here about $1.00 per roll. The rolls are approximately 40 feet long. This I cut in the middle, making two strips 16 inches in width.

I keep my hives in pairs with about four inches of space between. When packing time comes I put on corrugated paper from boxes or crates any grocer will give you, and tack them on just enough to hold until the roofing is put on. I run the roofing around the two hives, outside the corrugated paper, fastening with slim strips of wood, using 3d wire nails. These are so fine that they do not make undesirable holes in the hive, and I drive them in just far enough to hold, leaving enough outside to make them easy to remove in the spring. I put some sort of paper or the roofing on the front, separate from the main strip, just to save cutting a slice out for the entrance, and to keep the front from getting too warm on sunny days, and inducing the bees to take flights when too cold.

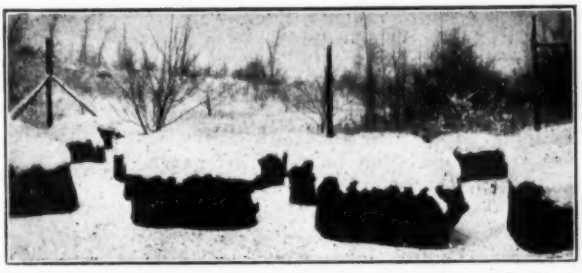
In the spring I pull out the nails with nippers, laying the roofing some place in the shop, on the floor or any place convenient, as it doesn't hurt to walk over it. With the usual preparation I simply forget about the bees until time to uncover. I have given up tar paper. It is harder to handle, breaks and wrinkles, and does not fit so closely as the roofing, and the roofing will last, handled this way, I don't know how long. I have some which has been used for several years that is perfectly good yet. Don't get the higher priced heavier roofing as it is harder to handle, breaks more easily and doesn't give any better protection. We have the same latitude as Chicago and New York, and it gets cold here, of course.

I have used this method for several years and have never had any loss from freezing.—A. L. Timblin, Omaha, Nebr.

COLD DIDN'T HURT THESE BEES

Ample Food and Adequate Protection Should Be Furnished in Early Spring

The illustration shows one of our yards at noon, April 16, 1935, with nine inches of snow on the ground. On April 15 at noon the bees in these colonies were carrying in pollen and the weather was clear with nice warm sunshine. Such extremes in the spring would indicate that good packing was highly desirable in order that colonies might maintain the proper temperature for brood rearing. The absence of such packing is what was worrying C. P. Butler, Caledonia Springs, Ontario, when he wrote the letter appearing



April 16, 1935, in the Chazy Orchards' apiary.

on page 213, April, 1935, Gleanings. We have about the same temperature and weather at Chazy in northern New York as prevails in southern Ontario. The pictures of Mr. Butler's apiary could have been duplicated at Chazy on the same dates. During this last winter the temperature was down lower than —25° F. twice, with other cold snaps when the temperature did not get up to zero for days. During the winter of 1933-1934 the temperature went as low as —40° F. Some of the neighbors claimed 50 below, with the ice on Lake Champlain over three feet thick, and on some of the rivers five feet thick.

During both winters the Chazy Orchards' bees were packed outdoors with a winter loss of less than 5 per cent. We packed an average of 300 colonies both winters. Good windbreaks are also very essential for winter protection. The yard shown is entirely surrounded by rock ledges and brush which effectively cut off the winter winds. When unpacked about May 1, many of these colonies had brood in ten frames or more with plenty of honey for feed still on hand. Some times it is necessary to exchange a few frames of honey for empty combs in the larger colonies.

Our wintering methods are as follows: 1. All colonies in two-story ten-frame hives, with the upper hive body full of good honey and the lower about one-fourth to one-third full of honey. 2. A home-raised young queen in each colony, introduced during August, thereby insuring an abundance of young bees in each colony for the winter. 3. Each yard is located near a woods or other good windbreak. 4. Colonies are packed in asphalt building paper with about six inches of oat straw insulation between the paper and the hives. Two colonies to each unit. 5. Packing done in October, unpacking first part of May. This system gives much stronger colonies for apple pollination than cellar wintering under our conditions.—George Rasmussen, Chazy, N. Y.

A CURIOSITY SATISFIED

Cyprian Bees Not So Satisfactory as One Is Led to Believe

I am naturally of a gullible nature, and I have a curiosity so large that it has been the means of my acquiring a lot of information that otherwise I would not have acquired; but, on the other hand, it has many times led me into embarrassing situations. I am a beginner and a backlotter in the bee business, and when I read Mr. Dodge's comparative statement regarding the honey producing qualities of Cyprian bees as compared to the Italians and Caucasians, and never having heard of the Cyprians, I concluded at once that if they could make more honey than other strains, it was the Cyprians that I wanted. So I immediately ordered ten Cyprian queens. I killed off my good Italians, and on their arrival introduced the Cyprians.

That was the 1st of May. This is the middle of September of the same year, and I will say that my curiosity regarding the qualities of the Cyprian bees is perfectly satisfied for the rest of my life. I will say before going any further that as honey producers, and guards I believe they are at the top, if not a little better than other strains. But I have learned also that if you want to enjoy beekeeping, the production of honey is not everything.

As I said, I introduced my Cyprian queens the 1st of May. After seeing that they were accepted and laying, I had no further need to look at them until July. By that time the hive consisted mostly of Cyprians. My instructions had been to handle them very gently. (While I expect that is right, I have not as yet learned the definition of the word gentle as applied to Cyprian bees.) I put on a veil, but no gloves, nor extra clothing, nor did I tie up the bottom of my trouser legs. As I was sure that gentleness would get me by all right, I approached the hive with the confidence of a Napoleon, and removed the cover as gently as could be done. Those Cyprians eyed me for a few seconds as if to size me up, and then one started for me. I will say they seem to have a method of instant communication, for on the starting of the one, the whole hive seemed to start at the same time. Needless to say, that cover was replaced with as much grace as possible and a run made for cover. I nursed swollen hands, and arms, and legs for a few days, while I meditated over the situation. I decided it was my fault some way in not handling them gently enough, and I had also concluded that I had not worn enough clothing, so after my swollen hands had returned to normal, I secured a pair of canvas gloves,

donned my old leather coat and went forth for another trial. I removed the cover with all the caution possible this time and was permitted to gaze down into the hive for a second or two. And then—the canvas gloves seemed to give them a better foothold so they could insert their stings still deeper than they could from the naked hand. They went through the leather jacket as if it were tissue paper. Napoleon never had an army better organized, for they were distributed equally from my head to my feet. They seemed to know beforehand just how to get up my pant legs in the quickest possible time. I retreated immediately and it was an unconditional retreat.

I put in a few more days nursing swollen parts and meditating on what was wrong, and by this time I had about concluded that there was something wrong with the bees. So I got out my bee supply catalog and ordered a pair of rubberized bee gloves. When they arrived I felt sure that I had the problem of protection solved, so, donning still another thickness of clothing, tieing up the bottom of my trouser legs, and putting on my new gloves, I set forth confident that my protection was complete this time. Well, I got the cover off all right and stood a while and dared them to do their worst. After they had me covered from head to foot and I felt no sting any place, I started to take out a frame of brood and found, to my sorrow, that the rubberized gloves were as nothing to them as they commenced to sting right through those gloves. It felt as if there were hundreds, but I guess the stings did not amount to over 25 or 30. Those below, finding that they could not make any headway trying to get up my trouser legs, hunted around until they finally found a small hole which they seemed to think was an entrance to a new hive or something, as they straight way started in by the hundreds. I soon realized that something would have to be done and that soon, so I quickly replaced the frame of brood and the cover, and made a run for the house. I ran around once and yelled to my wife to have the screen door open for me the next time around. She did, but regardless of our precaution, we let 15 to 20 bees in. My wife made a run for the closet and I made a dive to get under the bed. There was no use in beating around the bush—those trousers had to come off and come off quick, which they did. I stayed under the bed and my wife in the closet till the bees finally collected at the windows. This gave us a chance to sneak from under cover and let them out.

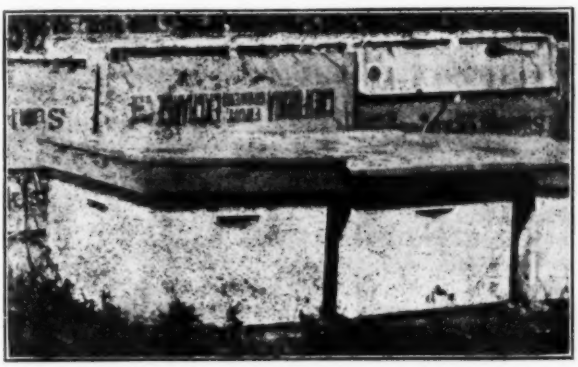
Well, that was the blow that killed dad, so to speak. After I fully recovered I decided I had learned all I wanted to know about Cyprian bees, so I immediately placed another order for queens, but this time it was for Italians. When they arrived, I got a piece of an old inner tube and made still another glove to go on over the rubberized ones. I had put on another thickness of clothing, and went forth as a royal executioner. I am perfectly satisfied now to let the fellow who knows what gentleness is to handle my part of Cyprian bees.—G. Otis Ainsworth, Dalhart, Texas.

PREPARING BEES FOR WINTER

Straw-Filled Crates Make Excellent Windbreak

A windbreak is essential the year round, particularly for bees wintered out of doors. Strong, well-packed colonies exposed to all prevailing sharp winds may die or come through the winter so weakened they are practically worthless, while colonies of the same strength in single-walled hives, well protected from winds, winter well and consume far less stores.

The center of a big orchard is an excel-



A windbreak made of straw-filled crates.

lent spot in which to winter bees. The force of the wintry blasts are broken by the many trees, so the hives in the heart of the orchard are well protected.

If a permanent windbreak can be secured, evergreens are ideal for the purpose. These should be on all four sides of the apiary or at least three sides, leaving the south side open. If trees must be planted, low quick growing shrubs will give protection while the trees are growing.

If neither of the above conditions are available a very satisfactory temporary windbreak may be erected quickly and very inexpensively by the use of straw-filled orange crates. The crates may be purchased from grocery stores, three for five cents. Some grocers will gladly give them away to get rid of them. Fill the crates with straw and place a double or triple row, open sides down, just back of the closely spaced hives. Bricks or heavy stones should be used to weight the crates down.

When the windbreak is removed in the spring the crates are easily disposed of by using them for kindling on the chilly mornings that are with us long after packing is no longer necessary.—Benj. Nielsen, Aurora, Nebraska.

BUMBLEBEES AND BASSWOODS

Did Darkness Overtake the Bees in Their Eagerness to Secure Nectar?

I was wandering among the giant fir trees of one of our Portland parks one evening during the middle of July when suddenly a great wave of fragrance burst over me. It came rolling up the hillside on a freshening breeze—the basswoods in full bloom. I walked around the lake to the other side where there was a grove of the basswoods, the two or three dozen of trees being scattered about on the lawn. As I was examining the blossoms I noticed a worker bumblebee. Strange, I thought, for it was between 10 and 11 o'clock at night and all good bumblebees should have been in bed long before. I started looking for more and in a half hour or so I counted 38 worker bumblebees and two honeybees.

This was very strange and I was unable to account for it. The day had been very hot. The thermometer had risen above the one hundred mark and while I was studying these bees the mercury stood well up into the eighties. There had been no rain nor sign of any. When I touched the bees they seemed half asleep or torpid. Only after disturbing them considerably did they come to life enough to fly. One of them had a fair sized load of pollen. The trees had not been sprayed so there could have been no poisoning. The breeze had been light all day. In fact, there was nothing at all to hinder them from going back to their nests. Perhaps this is the way of bumblebees. If so, it still doesn't account for the two honeybees. Maybe it is just one of Mother Nature's inexplicable mysteries.

While I counted only thirty-eight bumblebees, there must have been a great many more as the park lights were none too bright and I could examine only the lower branches. Where the bumblebees had their nests was difficult to say, although there were plenty of vacant lots within a radius of a few hundred yards.

The following afternoon the trees were being visited by honeybees and bumblebees in considerable numbers. That evening I found only two bumblebees clinging to the blossoms and no honeybees at all. The trees were giving out practically no perfume.

Did the bees stay the first night to smell the flowers? Who knows? I stayed there half the night myself.—Forest Angel, Portland, Oregon.

This apiary owned by Clark Fulton, Arkansas City, Kansas, is well protected against the prevailing winter winds.

DON'T THROW AWAY GOOD QUEENS

Thousands of Queens Are Lost Due to Faulty Methods of Introduction

No doubt thousands of queen bees are sacrificed yearly in the attempt to requeen queenless or supposedly queenless colonies. While some beekeepers claim to have successfully requeened such colonies and even those with laying workers, the attempt is seldom successful after all worker brood is emerged. A colony of old bees will almost always kill any queen introduced, no matter what the method of introduction.

We seldom lose any queens in introduction. In the first place, no attempt is made to requeen a broodless colony. Secondly, the introducing cage is kept closed for three or four days before the bees are allowed to release the new queen, at which time all queen cells are destroyed. In the requeening of more than 200 colonies in the last year or two we have lost only three or four. The loss in each case was on account of an overlooked queen cell or virgin.

It is generally believed that the new queen will destroy all such cells, but as a matter of fact, she often does not do so and if a virgin emerges or is present in the hive, the laying queen disappears.

The best that can be done with a queenless, broodless colony or one with laying workers is to unite it with one that is queenright, using a sheet of newspaper between the two to prevent fighting. The queenright colony should be sufficiently strong to protect its queen against the old bees of the added queenless colony.—E. S. Miller, Valparaiso, Indiana.

[We have found that a wintered-over queenless and broodless colony will usually accept a queen. In fact, we have simply run queens into such colonies that are, as a rule, howling for a queen.—Editor.]

CELLAR WINTERING

A Wintering Method Adaptable to Wisconsin Conditions

A recent article on cellar versus outdoor wintering states that if bees are wintered in cellars, a person must be there every day to regulate the temperature of the cellar. I find that the temperature of a good cellar will vary only a few degrees, whether it is 40° below zero outside with a strong northwest wind blowing, or 90° in the shade. A drain with both ends open gives very good ventilation. The drain should run underground for some distance from the cellar. There will be a constant current of air passing through it, but on account of the air going so far underground it will be practically the same temperature as the air in the cellar when it gets there.

As to the cost of building a cellar and the labor of putting the bees into it, I didn't put any cash into my bee cellar because I didn't have any cash at the time the cellar was built. My cellar is 16 feet square inside and six feet high. The sides and ceiling are made of old railroad ties (the ties are keeping perfectly) and the doors are made of a little lumber and tarpaper. There are two doors to the cellar proper, then an eight-foot entranceway and an outside door. The drain can be made of stone (in this country, at least.) Tile can also be used.

I have been keeping bees only a few years but have wintered them very successfully. I know a man who has had bees for three years. He has never taken off any honey and has never had a swarm live over winter. He winters his bees outdoors then gets new packages every spring. There wasn't a day here last year between November 10 and the first of April that bees wintered outdoors could take a cleansing flight.

The only attention my bees get from the time I put them in in the fall until I take them out in the spring is to go in occasionally and carefully put my ear against a hive, just to see if they're still alive. I could just as well go to Florida for the winter as far as my bees are concerned.—Arba B. Cottrell, Wisconsin.

A FEW SCRAPS ABOUT QUEENS

Life Need Never Become Boresome to the Beekeeper Who Is a Close Observer

I'm not attempting to tell anyone how to raise queens—I am leaving that to the many who have the art down to a science. Neither is this a tale of unusual successes—just a few curious incidents that may be of interest to those who liked to read of things just a little out of the ordinary.

You've all heard the expression "scared stiff." Have you ever seen a queen bee lit-

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erally and actually in that condition? I have no other way to account for this behavior. I was going through this colony, among others, ascertaining the amount of brood preparatory to making a few divisions. This particular hive was treated in no way differently from the rest—very little smoke being needed. I had taken out several frames when I caught sight of the queen. She was head first in a large drone cell near the bottom corner of the comb, apparently lifeless. I grasped her gently by the wing and laid her in my hand. She lay there motionless and limp for perhaps two or three minutes—only her antennae moving. I then placed her on a comb leaning against the hive where the bees immediately "ringed" around her. Much to my surprise, in a minute or two more she was walking about—rather weakly but apparently O. K. I replaced the frames in the hive, and on the next visit she was still all right—remaining so until the colony was requeened in late summer. What caused her coma, I don't know—I'm sure she hadn't been squeezed or rolled—but I rather think that for some reason or other she was badly frightened—really "scared stiff."

Do queens received from the South ever go for a second mating flight? Either such can happen, or I received two virgins this spring. One came with a two-pound package which was installed in the recommended way. The weather was cool—so cool that for about four days the bees had no flight whatsoever. On the fifth day it warmed up a trifle about noon time, when the sun shone off and on for a few hours. The next morning as I walked by this hive, I noticed a small ball of bees about a foot to one side of the entrance. Curious to know just why they were there, I poked the stiffened cluster apart. There, in almost the very center, was the queen —also stiffened with the cold. I picked her up and carried her into the house where she quickly revived. When the day grew warmer I opened the hive that stood closest to the spot where I found the queen and found the bees queenless. I gave them the queen. They accepted her, but, of course, she proved worthless—never even starting to lay, although she looked fine.

The other queen which I think was a virgin was introduced to a nucleus. She was accepted in four days but did not lay for about ten days afterwards. During this time I saw her at least once when she had just returned from a mating flight. She proved to be a fair queen.

Were these two virgins or old queens mating again? Why didn't the first one find her way back into the hive? My theory is that a cloud passing before the sun chilled off the atmosphere so that she was not quite able to make it. Either some bees were along with her or found her when she almost returned.

Then there was the old queen from an attempted swarm that crawled into an adjacent hive. Instead of killing her the bees for some reason let her remain. I found the young queen (I had just requeened this hive), which was not clipped, lying in front of the hive—dead, of course. The strangest part of it was the fact that while the bees allowed the strange queen to enter and kill their own queen, they almost immediately superseded her. Bees sometimes do unexplainable things like this, as every beekeeper knows.

Another incident similar to this, but with an almost opposite result, occurred during the summer. I had neglected to remove the cells in the top of a Demareed colony and a number of young virgins had hatched. Not knowing this to start with, I commenced shaking bees from an apparently finished super and had shaken several before I saw the recently hatched-out queen cells. I then quit shaking and closed the hive for the time being, but thought that the laying queen below (which happened to be a large fine one) was gone for sure. The next morning I saw a large queen lying dead at the entrance—but unclipped. To make sure, I opened the brood chamber after disposing of the remaining virgins on top, and there, fit as ever, walked the laying queen. Whether the bees killed the virgin (she did not look as if she had been balled) or the old queen, I naturally could not be certain of, but like to think that for once the reigning queen successfully defended her domain.

And finally, a word about the virgin with a real homing instinct. An introduced queen had been killed by a virgin hatched from an overlooked queen cell. It was rather late in the summer so I removed her, thinking the colony needed a laying queen to prepare the winter cluster. The virgin was from good stock, however, so I placed her in a cage over another colony. In doing so, I had held her by one leg in a manner that injured it,

causing it to drag. Three days later I took the cage over to a nucleus thirty or forty rods away, to introduce her there. In some way she escaped from the cage. I watched her fly around a bit and then closed the nucleus, hoping she would fly in among the bees at the entrance as the day was rather chilly.

Three or four days later, I came to inspect the hive from which I had removed her (the original one) to see if the laying queen had been accepted. I had clipped the queen I was attempting to introduce so was greatly disappointed to find an unclipped queen and no eggs in the hive. I was at a loss to understand this, when I happened to see one back leg of the queen dragging. I at once remembered the virgin and had no choice but to believe that this was the same one. If so, her memory must have had remarkable tenacity as to her old location. She had been in a cage three days, and would have had to fly directly back to her original location as the day was too chilly to permit of much flying around. Even granting that she did get back, why did the bees accept her? She had been gone long enough to be the same as a stranger. Perhaps she walked in "without knocking," so to speak, the bees probably not even questioning her. Anyway, she must have made short work of what she considered an usurper, as the laying queen was nowhere to be found. Incidentally, I didn't kill her but put her back into the nucleus—only this time she didn't fly away from me. I figured (perhaps foolishly—I don't know) that when she was able to do away with two adversaries, she had earned her life.

Bees are treasure houses of incidents—no two days are exactly alike. One certainly need never be bored, another reason beekeepers find their work so interesting. To my mind, this is no small advantage—any work gains zest by freshness from day to day, and apiculture is always that.—C. M. Isaacson, Middle River, Minnesota.

COMMENTS ON CURRENT ITEMS

We have had a wide experience with about all the different ways of winter protection, including the four-colony, the two-colony and the individual packing case. All of them brought our bees through in good shape. The above mentioned plans, also the waterproof case took too much trouble and time in packing and unpacking and cost more than the permanently packed double-walled hive. One great advantage in the double-walled hive is that the bees keep the early brood warm.

We were much amused in reading in the "Niagara Falls Review" that in that vicinity apiarists are having a hard time filling orders for people who are asking for honey as an antidote for hay fever.

Mr. Beyleveld's plan (page 603, October Gleanings) to allow the escape of drones will work all right. We think though it is better to "stagger" the supers.

Mr. Isaacson, on pages 605 and 606, makes a good point in his objection to fall feeding instead of the food chamber for winter stores. In this climate where we seldom have zero weather there are usually opportunities for flight after feeding time.

There is no guesswork or weighing necessary if a full shallow super of honey is left on the hive, and I am pretty well convinced that bees build up faster in the spring when natural stores are supplied. We believe we were among the first who used and advocated the food chamber. We have yet to learn of any beekeepers who have discontinued the use of the food chamber after having once adopted it.

When I read the editorial on page 611 in regard to the two-story brood chamber I said to myself: "Well, here is another one." For a number of years after I adopted the food chamber system I did that very thing. When the real clover harvest was on I lifted the food chamber and after being sure the queen was below I put the queen excluder over the brood chamber, and if clover honey was coming in, I put two or more shallow supers over the queen excluder and the food chamber on top, taking care of any queen cells at the proper time. For the last seven seasons I have had a full-depth brood chamber over several of the colonies. There were few swarms and when I removed the extracting supers I invariably found the top brood chamber well filled with honey. I now keep two shallow supers under the queen excluder and leave them on all summer. I will agree that full-depth combs in the food chamber might be better, but as my shallow supers are just one-half as high as the standard depth of the frames in the brood chamber there is little inconvenience.

Any unprejudiced person will admit

that any system that will save time and money is well worth considering. The point that is so often made about forcing bees to warm up such a large area of space is not well taken. Place the thermometer on the bottom board of a hive containing the brood chamber only and it registers no more than one that has the double brood chamber. Place the thermometer six inches higher and they register the same. The bees are in the top of the hive where the temperature suits them. It will be just as warm up there with two supers as it would be with one. The top story is probably two-thirds full of early gathered honey and is pretty sure to be chuck full at the close of the fall bloom.—J. F. Dunn, Ridgeway, Ontario.

SPINSTER JANE SAYS—

It must be a fine thing to be a real successful beekeeper on a big scale. Even being one of the small back-yard variety has its satisfaction and its thrills, but to do things on a large scale—well, it would be wonderful.

I think every man and woman to get the most out of life, should have time to read, to think, as well, and to have time for recreation. On the farm there is always work, both winter and summer—a never-ending routine of chores that must be done. With the beekeeper there can be a whole winter, free to be devoted to mental growth through study, to reading, to winter sports, to a winter spent in the sunny South, or to what have you.

Doesn't it look good to any hard-working man or woman! A time to make dreams come true.

Honey-boy once wrote a big Ontario beekeeper for a job. The reply came home weeks later from the Bahamas. That in itself was an inspiration to the boy. "Perhaps," said he, "some day I, too, can holiday there if I can make my bees pay."

Isn't it well to hitch our wagon to a star? To keep the successful man before us as the ideal, then to go one better if possible?

We talk and think of ideals, then just look in the daily papers and forget them. War, devastating and degrading, is a reality at last and how we pray it may not reach out its mighty tentacles to get more nations in its clutch.

Then to shatter our ideals also is the present election campaign, and happy is the man or woman who has a discerning mind and some real common sense. Each party shouts of its superiority and makes impossible promises the while it berates its political opponents. Canada is torn apart by two aspiring new parties along with the older better known parties, and any man listening to all and reading all sides, must be left bewildered.

Again all eyes are fixed on Alberta to see if Mr. Aberhart can make his social credit scheme work out.

The N. R. A. was tried out and in that trying out great advancement was made. Perhaps this will be true of Alberta. Only in stagnation do we retrograde.

We can thank our Maker these troublesome days for a neighboring nation whose ideals are the same as ours, whose aim is peace, their passions, that lead to murdering our fellowmen in modern warfare, as yet unstirred. Thank God for our quiet homes, and for peace.

In those hives securely packed outside, well-stored with winter rations for winter, can we not glimpse restful winters soon to be ours when we, too, have worked hard enough to make it possible? Let us maintain our high ideals and think of the common weal of the human race rather than come to death grips with our fellowmen through greed. Go one better than the honey-bee and respect the rights of the workers in weaker hives.—Spinster Jane.

Let's Be Kind to Our Friend

The different bee magazines of the United States have brought to our attention by their editorials the American Honey Institute. Month by month they indorse and praise the work being done by the Institute, and stress the vital need of funds to enable this great advertising medium to continue its fine work for the honey producers.

It has occurred to me that the rank and file of beekeepers may not know what the Institute is. Possibly many beekeepers look upon the Institute as a creation of the different manufacturers of beekeeping supplies and the honey interests of our country. If this is your belief it would be well to learn the facts.

I can not believe there are only 1000 out of 800,000 beekeepers—one beekeeper out of 800—who are patriotic enough to the fraternity of beekeepers to support what has proved to be the greatest medium

for popularizing honey in the entire world. Is it that we are too poverty stricken as a class, that we simply put it off, or that we do not care if we sell our crop at a profit or at a loss? There must be a reason.

Most of the countries using the English language have copied our Institute or are contemplating starting one like it after seeing what it has accomplished for us here. I spent some time at the public library looking over 30 different magazines of the current month in search of honey references in advertisements or in recipes for table use. In all, there were 17 magazines which contained articles, recipes or advertisements in which the word honey appeared.

This looked very good to me. Wishing to know what improvement this was over past years I gathered together all the magazines on file for 1925 of the same month. In all there were only ten available. Keep in mind as you read this that the year 1925 was in boom times and money was spent lavishly. I found the word honey did not exist as far as these magazines were concerned. I looked over all advertisements and food recipes and the word honey did not appear even once. I found the competitive foods of honey well represented—sugar, maple sugar, Karo and molasses—both in advertisements and in cooking recipes.

The difference between 1925 and 1935 in magazine advertising we owe to the American Honey Institute. It is the lever which has given honey this wide publicity at little or no cost to the beekeepers of the United States. Baron Collier, the great advertising man states, "Action, Action, Brings Business. Advertising All Day and Every Day Gets Action." We are having more action today in advertising honey than ever before. I am not doing it, you are not doing it, but the Institute is!

Many of you may say: "The Institute has not helped me individually." Can you be sure of this? What would you be getting a pound for your honey if the bakers, candy makers and many other interests had not been sold to the use of honey by the Institute? What would have become of the hundreds upon hundreds of thousands of pounds of honey which they are now consuming annually? Fifty-two weeks of the year they are using honey and they are advertising honey 365 days of the year in their printed advertisements and their neon signs in the business sections of the different cities, "Honey Krushed Wheat Bread," and so on.

Remember, the Institute is not a selling organization, nor is it an organ of the big honey interests of the United States. It is working for all beekeepers all the time. If you are a contributing member and you have any special problems to solve, see if the Institute can help you. You may be pleasantly surprised.

Are you going to let 1000 men support the load which 800,000 should be carrying? We, who have contributed, need our hard-earned dollars just as much as you do. We, however, are sold on honey and are willing to back our faith to the extent of a dollar or more; are you, friend? If actual cash is hard to find with you, you can contribute honey which will be accepted by the different men about the country appointed to receive donations of this kind. This honey will be sold for cash, and the amount credited as a membership to the original donor.

If you are a beekeeper, free born and living in a free land, help support your end of the load which is now being carried by too few individuals. Don't wait for some one else to do it. You do it and you will be helping yourself as well as the American Honey Institute, which, after all, is your Institute.—Penn G. Snyder, Dayton, Ohio.

WINTERING IN NORTH DAKOTA

Outside Wintering With Adequate Protection Is Preferable to Cellar Wintering

During the winter of 1933-34 I wintered my bees in a cellar underneath my house. I lost almost all of them and I do not want to winter any more bees that way. This past winter of 1934-35, I left my hives on their stands and packed six inches of dried leaves on all sides, held in place with burlap. I left a four-inch entrance and made a tunnel with a six-inch board by nailing two pieces of plaster lath across. That made it just the right height for bees to pass out. I did not lose any colonies despite the cold weather we had, the temperature in January ranging from 10 to 35 below zero nearly every day. I will not hesitate to leave my bees out all winter in North Dakota. A good dry packing for bees outside is far better in my opinion than cellar wintering.—J. Rannald, Bismarck, North Dakota.

A Few High Lights of Detroit Convention

E. R. ROOT

The Banquet

The big international congress at Detroit, Michigan, from October 5 to 10, has gone down in history as one of the great events in apicultural history. Perhaps, the aggregate attendance of those coming and going was not as great as the big meeting held at Valdosta, Georgia, last December, yet in point of good will, enthusiasm and helpful co-operation, it was fully the equal to it. The banquet on Tuesday evening, with Prof. J. M. Robinson, of Alabama, as toastmaster, was a gorgeous affair and in point of attendance was fully the equal of the big banquet at Valdosta. Robinson's effervescent witty introductions brought down the house time and again.

There were perhaps more leaders of the industry represented on the program than there were at any previous meeting. We will not attempt at this time to give the list. With the exception of a very few, they appeared as indicated in the program given in our last issue, page 637. Now for the high lights.

The American Honey Institute

Mrs. Malitta F. Jensen, Miss Mercedes Cranston, Miss Mary I. Barber of the Kellogg Company, and the various nutritional experts of private corporations that feature honey along with their food products, gave us some very interesting information on the subject of honey as a food. Mrs. Jensen showed that the Institute had made many more contacts with bakers and private corporations for using honey in their various food products. Miss Cranston, Mrs. Jensen's assistant, a graduate nutritional worker, showed that she will be a valuable addition to our Institute staff. It was very evident that the American Honey Institute is introducing honey into avenues that would never be reached by the ordinary beekeepers, by the bee journals or the bee supply dealers. This is shown in the fact that most of the large lots of honey are already sold. It is

T. W. Burleson and wife, Waxahachie, Texas, as they stood out in front of the bus that conveyed us to the Ford plant at Dearborn. Mr. Burleson is the newly elected president of the American Honey Producers' League. He with Russell H. Kelty, President of the American Honey Institute, and Geo. W. Bohne, of Luling, La., President of the Southern States Bee Federation, will preside at probably the greatest international congress of beekeepers at San Antonio ever held in America. Mr. Burleson is a leader in the South, a natural fluent speaker and the logical man to head up the League at this important meeting.

to be regretted that the beekeepers over the country could not have been present to hear what these food experts had to say about how honey is going into other foods.

Package Bees vs. Wintered Over Bees

It developed between sessions that not

Mr. and Mrs. Russell H. Kelty. Both worked hard to make the great Detroit Congress a success. Mr. Kelty is President of the American Honey Institute. He has been one of the main factors in putting Michigan in the front ranks as a honey producing state.

a few of some of the most succesful honey producers in the United States are killing the remnant of their bees in the fall, and buying package bees and putting them on to combs of honey in the spring. This matter has been brought up before, but it is more and more apparent that in the colder climates some big honey producers are finding it just as economical, if not more satisfactory, to kill the few bees that are left in the hives and use the reserve of stores in the combs for package bees next spring. It is not so surprising that some of the big honey producers are finding that 50 or 60 pounds of the choicest honey (needed to winter over a colony) would go a very long way toward buying package bees to put on the combs in the spring. It is argued that the bees from the South are young and fresh; bees wintered over are old and worn out and die rapidly in the spring. Such colonies need a lot of food and careful nursing to bring them through.

In this connection, it should be said that more and more package bees are used to strengthen weak colonies wintered over. It was formerly the practice to double up weak colonies in the same yard. Now it seems to be more and more the custom to put one or two pounds of bees with the wintered-over lot instead of uniting from the same yard.

It should be said, however, in all frankness, that not everyone will find it practicable to use package bees instead of those wintered over. Much will depend upon the class of stores, the age of the bees and the queen, the locality and of the probable winter losses. Most persons can afford to winter over.

In this connection, it is rather inter-

In the background is the bus that took some of the beekeepers out to the Ford plant. In front, from left to right: Miss Mercedes Cranston, of the American Honey Institute, Mr. K. Atkinson, Mrs. R. H. Kelty, and the ever-genial C. B. Gooderham, Dominion Apiarist at Ottawa.

THE WISCONSIN STATE BEEKEEPER
Established 1866
Annual Dues of $1.00 include yearly subscription to—
"Wisconsin Beekeeping" Supplement
and
"Wisconsin Horticulture"
Stationery
A list of members is published at inter vals
Labels
And the Associations aim for 1935 "Every Association
Inst." At this time 87 memberships - 35 plaque

Wisconsin State Beekeepers chart that carries its own message.

esting to note that a good many of the northern beekeepers pack their bees, go South for the winter and bring back package bees in the spring in their own trucks. These are put on empty combs or used to strengthen weak colonies.

Liquor Buyers

Another thing that developed between the sessions and not from the platform at the convention was the number of buyers who came to Detroit, not as as beekeepers or bottlers of honey, but to pick up a stray carload of honey, first quality thin or fermented, for the manufacture of alcoholic beverages, particularly wine. This is the first time at any convention that buyers for the liquor business were in evidence. See reference to this on page 685.

Some New and Old Facts on Honey

Dr. R. E. Lothrop, Bureau of Chemistry and Soils, Washington, D. C., not only showed that the mineral content of honey was very important but also brought out the very interesting fact that while honey is slightly acid, it is not acid forming in the digestive tract of the human body. It is quite the reverse—alkaline forming. Old people and children need more of the alkaline forming foods, and honey is one of them. This statement, coming from the Bureau of Chemistry and Soils, is going to mean much to the beekeepers of the United States.

Dr. E. J. Dyce, Guelph, Ontario, Canada, gave some very interesting information on the packing of honey. Sixty per cent of the honey sold in Canada goes out as a granulated honey with fine crystals. In other words, honey cream with fine crys-

Washburn-Crosby exhibit in the left background. The Kellogg Company exhibit at the right and the honey cakes and cookies submitted for the Institute cookery contests in the foreground.

tals is used to a very large extent in Canada.

Fine air bubbles scattered all through honey in liquid form should be removed, says Dyce, not only because they make the honey look cloudy but because they encourage granulation when it is not wanted. The better the straining, the less granulation.

These air bubbles if given time enough in a warm atmosphere will rise to the top. They can be removed by filtration or by a vacuum. Dr. Dyce did not recommend the vacuum process for this purpose as it was expensive, nor did he recommend the method put out by the United States Bureau of Chemistry and Soils because he felt filtration through a filter aid went too far in that it removed some of the flavor.

In order to prevent regranulation, he said, the honey should be heated to 160 degrees and then filtered through several thicknesses of cheesecloth. It should be bottled and sealed while hot. Any residue of air bubbles left will rise to the top because of the vacuum at the top of the jar. Both Dr. Dyce and Dr. Milum brought out the point that pollen grains and air bubbles encourage granulation. These constitute nuclei around which crystals form. It therefore follows that filtration through strainer cloth is important.

Diminishing Crops of Honey in the United States

Harold J. Clay of the Bureau of Agriculture Economics at Washington, D. C., brought out the somewhat startling fact that there are not only fewer beekeepers today in the United States than formerly but less honey is being produced. He also showed that there has been a great decrease in the relative amount of comb honey production to that of extracted. The lighter production of honey in sections he thought may be due to the general effect of the pure food law enacted in 1906. The public has now come to believe that honey in bottles is not only cheaper but absolutely pure. In former days, it was believed that the only pure honey was that in the combs and hence the relatively large consumption of comb honey in former days.

W. F. Straub, president of the W. F. Straub & Co., Chicago, Ill., large packers of honey in tin and glass, stated that owing to the shortage of the crop and the rapid rise in prices, packers of honey in

(Continued on page 695.)

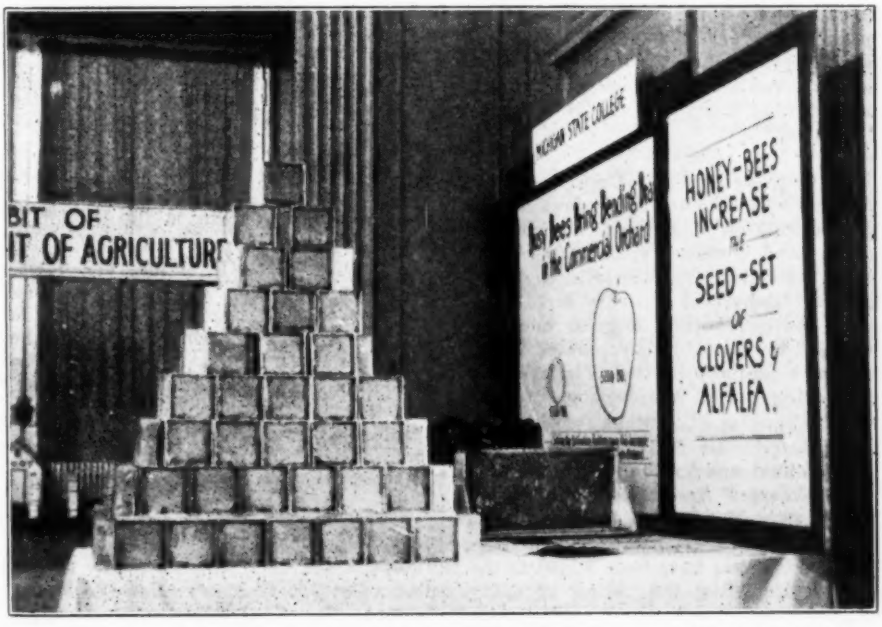

Exhibit at Detroit of the Michigan State College. The comb honey on the left speaks for itself. The wording in the chart in the corner reads, "Busy Bees Bring Bending Branches to the Commercial Orchardist." The relative sizes to the two diagrams of apple show how the bees increase the size of the crop.

Just News

EDITORS

An interesting and instructive 31-page booklet entitled, "The Cause and Control of Swarming in Bees," being the report of a conference held at Rothamsted, England, April 27, 1935, may be obtained by writing to the secretary, Rothamsted Experimental Station, Harpenden, Herts, England. The price is 1/6.

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The California State Beekeepers' Association will hold their 46th annual convention in Oakland, November 19, 20, and 21. This is more than a state convention, for the beekeepers of all the five Pacific states have been invited and at this early date many have accepted the invitation. For details write to Cary W. Hartman, Secretary, Oakland, California.

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A postal card dated September 13, 1935, from C. W. Rumsey, Dushare, Pa., reads as follows: "I just wanted you to know the glad news. There is the greatest flow of nectar on from several kinds of goldenrod and aster I have ever seen, and I have been with the bees for over 50 years. Water is dripping almost continuously from the entrances of hives and such fanning and humming I never heard at this time of the year."

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The Washington State Beekeepers' Association will hold its thirty-first annual state convention at Yakima, Washington, Tuesday and Wednesday, December 3 and 4. An interesting program is in the making. Very important business is to come before the convention. Regular members are urged to attend. Beekeepers of Washington are cordially invited. Visitors from neighboring states are welcome to the meeting.

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The annual convention of the Minnesota Beekeepers' Association will be held at the Lowry Hotel, St. Paul, Minnesota, on November 4 and 5. Many new and interesting features have been added to the program, including the giving of many valuable prizes, such as (1) 25 pounds comb foundation, (2), one dressed turkey, (3) one crate of 50 five-pound honey pails, (4), two dressed chickens, two banquet tickets, etc. Many other prizes will be offered, and all who attend have an opportunity to draw for the prizes.

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We quote from a letter received October 3, 1935, from Mrs. M. F. Jensen, Secretary of American Honey Institute, Madison, Wis.: "It's pretty difficult to believe that one company (the Gold Medal Foods, Incorporated) would spend a quarter of a million dollars for advertising and merchandising honey chocolate cake, but that is exactly what has happened. When the final details of the development reached our office we almost hit the ceiling. There is not a great deal of advertising to the words chocolate cake, but 'honey chocolate cake' is new. We might just say that a quarter of a million dollars is being spent on merchandising honey."

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A wonderful article on the "Defense of Insects," taken from the Scientific American, and reproduced in the Readers' Digest for October, says that of the 500,000 species only 300 are man's "convicted enemies." Among other useful services insects perform, it says that "without the aid of insect pollination, we would have practically no crops at all." It refers to the value of bee venom in the treatment of certain rheumatic conditions and of the value of bee moth in the killing of tuberculosis germs for which man has discovered no successful serum. The Scientific American, unlike some scientific publications, is very careful in the selection of its copy and so we may consider the above article on insects authoritative. The Readers' Digest is a magazine, by the way, that every thinking man and woman should read from cover to cover. The editors of Gleanings both take it.

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"The Cities of Wax," is the title of a new book on bees and their life habits by Julie Closson Kenley, published by D. Appleton-Century Company, New York and London. Mrs. Kenley, although unknown to the beekeeping world, has written many stories and her published books in-

(Continued on page 703.)

Editorials

Lesser vs. Greater Wax Moth

The article by V. G. Milum in this issue, page 662, is a milestone in the study of wax moth, particularly the lesser wax moth. Unless something comes out better in the meantime it will appear in the next edition of the A B C and X Y Z of Bee Culture.

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Modern Trends in Wintering

There appear to be at least three trends with reference to wintering bees. The first is that of wintering out of doors in food chamber, or double-story hives. The proper use of the food chamber helps to insure populous colonies to go into winter quarters and this is one of the most important requirements for successful wintering.

There is one advantage in favor of the food chamber hive for wintering that needs to be emphasized, viz., the winter cluster is usually found near the middle of the two-story hive, where the two sets of combs come close together. The small spaces between the two sets of combs permit the bees to move laterally, onto fresh honey. In the olden days some beekeepers purposely punched a hole through the centers of the combs in the fall to permit the bees to pass from comb to comb without having to go over the top or underneath the combs.

The second trend is towards using honey or natural stores, instead of sugar syrup for winter bee food. By reserving an ample amount of honey for each colony, by using a food chamber on each hive, much unnecessary labor is saved. This simply means that many beekeepers are letting their bees feed themselves instead of taking away the honey that rightfully belongs to them and then feeding sugar syrup to make up the deficiency in honey.

It used to be thought that it was necessary to feed at least one 10-pound pail of thick sugar syrup late in the fall, regardless of the amount of honey in each hive, in order to correct the possible bad effects of late-gathered honey of inferior quality. This practice may be feasible in the far North, where bees get few if any winter cleansing flights, or, where bees are wintered in cellars. Ordinarily, populous colonies wintered outside will winter successfully on honey.

The third trend is towards somewhat less insulation or winter packing. Beekeepers in the North are changing over from excessive packing, such as was formerly given in quadruple cases, to a moderate amount of packing of hives placed singly or in pairs. Special emphasis is being placed on young queens introduced in the early fall, young bees, an abundance of stores and a suitable windbreak to protect bees from cold winter winds.

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"Honey Has Been Tamed"

In "The Canner" of September 21 appears one of the best articles on the subject of honey and its general uses in connection with other foods that was ever published, entitled, "Honey Has Been Tamed." It was written by W. F. Ardis, and is so well done that it will do a world of good for the general honey business in the United States. It occupies two full pages of "The Canner," a magazine that has a very wide circulation. It is one of the most readable articles on honey that was ever published. It first begins with the statement of the unique qualities of honey as a house food, its value for new born babies by supplementing mother's milk with honey; its value to athletes using honey as an "energizing diet." It tells how honey improves a loaf of bread, how it may be used in marmalades and other foods of similar nature.

Our readers should help to support an article of this kind and we suggest that they write enclosing 10 cents to "The Canner" Magazine, 140 North Dearborn St., Chicago, Ill., for a copy of their issue for September 21, containing the article on honey by W. F. Ardis. If you do this, it may inspire the publishers to publish another article on the same subject. Too often erroneous information is published about honey. Here is a most refreshing exception.

Southern States Beekeeping Federation Meeting

There will be held at Nashville, Tenn., on December 2, one of the most important meetings ever held in America, to consider the bee package question. Nashville is just about halfway between the northern and southern beekeeping interests. This will make it possible for both sections to be represented. In view of the fact that the N. R. A. was declared by the Supreme Court as unconstitutional, there is fear that the A. A. A. of a similar purpose for the agricultural interest may meet the same fate. If so, the bee package agreement, that has worked so satisfactorily under the A. A. A., will become null and void. There will be again a general cutting of prices, poor quality of bees and queens, and no end of complaints. By a friendly co-operation of all interests this state of affairs could be avoided just as many industries in the country are still living up to the spirit and purpose of the N. R. A.

As is pointed out elsewhere, page 679, the demand for package bees from the North will become much greater than ever. Under the old order of cutting prices many of the package men would quit the business. Under the code they can make a moderate profit. Without it, there would be chaos and the North could not get its requirement of young bees and really worth-while queens. The North should be equally interested with the South in protecting the bee package industry.

The Supreme Court, now in session, will soon pass on some of these questions and a decision on A. A. A. may be rendered at or before the time the meeting is held in Nashville.

An interesting program is being prepared by the following: President Geo. W. Bohne, of the Federation; Morley Pettit, representing Canada and the North; E. G. LeStourgeon, of the Beekeepers' Item, San Antonio; and Mr. Julian Allison, Nashville, Tenn. The speakers will be carefully selected and there will be given an opportunity for discussion between the papers or addresses.

The meeting place is the Andrew Jackson Hotel, Nashville, December 2. The date, December 2, twice already announced in this journal, was accepted by the Secretary, G. G. Puett, of the Federation at Detroit, after a conference with the retiring president of the League, J. W. Newton, and President-elect Tom Burleson. The reason for accepting the 2d, in place of the 9th, was to give the Legislative Committee of the League an opportunity to attend the meeting in Nashville on the 2d, then a conference in Washington from the 9th to the 15th.

Many beekeepers of the North who are contemplating going South anyway should make their plans to go by way of Nashville. They will get a cordial greeting and some valuable information on where to stop in the South.

If you are a large user of package bees it will pay you to go to Nashville whether you expect to pass the winter in the South or not.

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Why a Scarcity of Honey?

At the Detroit convention it was brought out that bottlers were having difficulty in finding sufficient table honey to meet their requirements. What is the explanation?

In the first place, the general crop this year, says H. J. Clay of the Government Market Reports, is the shortest that has been known in many years. R. C. Kelty, President of the American Honey Institute, Instructor in Bee Culture at State College, and a honey producer himself, reports that the honey in Michigan is all sold. Others reported at Detroit much the same for their respective states.

Second, much of the honey this season was too thin and inclined to ferment. The wet weather did not permit it to ripen. Bottlers could not use it.

Third, whether we like it or not, the liquor interests of the country found that this fermenting honey was just right for their purpose and they are buying large amounts of it. They find, just as they did in Canada, that honey is much better for the making of their products, especally wine, than any of the other sugars. Honey has flavor, mineral elements, and other substances not found in cane, beet, corn sugar, or glucase.

Fourth, we received a tip the other day from an inside source, that the makers of the best candies are now using honey in place of glucose or corn sugar and for the same reason that the liquor interests are.

Fifth, last but not least, the activities of the American Honey Institute have greatly stimulated the use of honey in

baked goods. The net result of all this is that honey is recognized as a supplementary food today as it never was before.

Will the price of honey advance sharply? In our opinion, no. It might go up a cent. A sharp advance would simply mean that the liquor interests, the bakers and candymakers would go back to glucose, corn sugar, or invert sugar. When the price of honey goes too high, the bakers invariably turn to invert sugar syrup instead, which costs only one cent more as a rule than granulated sugar. When the price of honey is too high, the bottlers can not meet the competition of jellies and jams. The housewife will substitute these products and honey will go begging on the shelves of the grocer. Beekeepers who are holding their honey in their warehouses expecting a sharp advance of two or three cents will probably be disappointed. We would like to see the beekeepers get a big price for their honey, but history has shown that when the price is several cents above sugar the housewife and the manufacturer will buy the cheaper sweet. Both Clifford Muth, of Cincinnati, and W. F. Straub on the floor of the convention at Detroit called attention to this danger of too high a price for honey.

We must not forget that when honey soared in price during the Great War, sugar was rationed to only a pound per family. It was out of the picture and in no wise a competitor of our product. Honey was the only concentrated sweet available and, of course, it jumped from 8 cents in car lots to 18 cents and 20 cents.

Another great war has not come yet, nor is it likely, and if it does the United States will not get into it. Until it does, and sugar rationed, honey can not take a sharp rise. Sugar will hold it down because the ice cream makers, bakers and candymakers, and the liquor interests will buy glucose, corn sugar or invert sugar syrup. A sharp rise in the price of honey would drive it out of the avenues of present consumption and we would have a serious time in getting it back.

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Lest We Forget

Even though National Honey Week, November 11 to 17, has been mentioned in recent issues, may we remind you again of this week, which is so important to the beekeeping industry and also to individual beekeepers?

During these seven days all agencies interested in honey have an opportunity to unite their efforts in bringing to the attention of the public the food value of honey, nature's oldest and choicest sweet. Just think of what might be accomplished for an industry during National Honey Week if all beekeepers could co-operate wholeheartedly and intelligently. Thousands of people who know about honey but do not use it regularly, may be induced to include it in their diet.

Beekeepers who wish to undertake a National Honey Week program may write to the American Honey Institute, Madison, Wisconsin, immediately for suggestions and suitable printed material for putting on a real Honey Week. Let's do all in our power to make the coming National Honey Week the best ever.

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The Toronto Bee Meeting

For many years the Ontario Beekeepers' Association has met in Toronto during late November. This years it is to be held at the King Edward Hotel, November 20-22. An unusual program is in store for those who attend. In the past quite a number of beekeepers from the United States have attended this meeting, and doubtless many are planning to be present this year. Beekeepers on this side of the line have much in common with Canadian beekeepers. We hope it may be possible for many of our beekeepers to take advantage of this convention, also to enjoy the genuine Canadian hospitality.

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Aster for Winter Stores

While not equal to the best clover or other light table honey, aster honey, if well ripened and sealed in the combs, colony strong and well protected, makes good winter stores. All fall honey, with the exception of honeydew, other things being equal, will bring the bees through the winter. But beware of unripe aster if the colony is weak. We have learned that it is not so much a matter of the kind of stores, if enough, as it is of young bees, lots of them and protection against prevailing winds.

From North, East, West and South

SOUTHERN CALIFORNIA, October 4.

Weather: The weather could not be more pleasant if we had ordered it, with days that are warm without being hot and nights that are cool without being cold. Of course, it is not honey weather, as practically all nectar-producing flowers have passed. Some days we can see many clouds passing over and we can look for a rain most any time. In fact, we had a few drops Sunday. Not enough to say it rained, but still it proved that there is yet a supply up there somewhere.

Honey Crop: The making of the 1935 honey crop is a thing of the past, although some beekeepers report bees working well on bluecurl up to a few days ago. This plant comes up in late summer and in some favored localities will often give a good fill-up for winter. The plant has a strong turpentine scent and the honey granulates very quickly. Considerable of the honey crop has gone to market at varying prices. Some of the balance has been placed in bonded warehouses while the remainder is in all kinds of places, from the beekeeper's back yard, barn or garage to the privately owned warehouse. Fortunate is the fellow who has a nice lot of honey, with no pressing obligations, who likes his business and can sit back and prepare for next year's work, with nary a care for the morrow.

The market for honey is getting stronger and the demand from buyers is also more pronounced. That is, they come around more frequently and are offering more than when the crop was first harvested. All agricultural crops are higher in price. When large armies are being mobilized all foodstuffs are likely to advance in price and honey is no exception. The writer recently looked over some old copies of the Western Honey Bee for the years 1917 and 1918. White honey is quoted in 1917 at 10 cents and in 1918 at 22 cents. Who gets the profit? Very few of us were able to sell at the latter price. In case of war are we likely to get those war time prices again?

Beeswax: Beeswax is a little more in demand with a stronger tone in the market.

Miscellaneous: A story comes to the writer like this: A buyer for a San Francisco house bought 500 cases of honey from a producer at a very low price. Later he called on another beekeeper, saying that he had bought so-and-so's honey, quoting a price ½ cent below the price paid, and got the second lot. This is only a sample of many beekeepers' business-i-tis. The loss on 50 cases of honey would pay for membership in a beekeepers' club and subscription to a bee journal for half a lifetime. They could at least get information that would keep them informed as to what they should get for their honey. All too many beekeepers sell to the first buyer who makes an offer and swallow his story of a big crop and a low price as orthodox. We are no shining example of business success but we do try to keep informed of crop prospects and crop carry-overs and from such information as we have, form our own opinion as to a fair price that we should receive for honey. After nearly 40 years of California beekeeping we sometimes wonder at the stupidity of some of our own actions in the past years. For instance, selling honey at 3½ cents a pound. Common sense tells us that it can not remain at that price long. Nothing but absolute necessity should cause a beekeeper to sell at such a price. No foodstuff will long remain below the cost of production. Honey will keep, as it is not perishable like so many farm crops and there is always a market. We have a wonderful vocation with a freedom given to few producers and still many are dissatisfied. If we can have a few tons of honey in the shed and no obligations it is a very satisfied feeling. — L. L. Andrews, Corona, California.

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NORTHERN CALIFORNIA, October 4.

Weather: The sun still shines in northern California, although we have had one light rain. As far as the bees are concerned, we are ready for the rain and the more we have of it during the next few months the better beekeepers will be pleased.

Honey Crop: There are still a few of the old timers who "got some honey" and the most of these rushed their honey onto the market, thus fixing a lower price. More

honey is being held in the hands of producers than usual.

Beeswax: An increased number of beekeepers are planning to turn in their wax to be made into foundation for the early honey flow of 1936. There is a demand for the wax the beekeepers want to sell.

Miscellaneous: The majority of beekeepers who requeen in the fall have finished and have their bees in condition for winter. The same is true of the beekeepers who requeen in the spring. The past season has shown all wide awake beekeepers that it pays to requeen in the spring or fall—and that means once a year for migratory beekeeping.

Now that the crop of 1935 is about finished, it is interesting to study the difference of opinions of beekeepers with reference to their plans of production. Here in the star thistle district we have two plans. The first is the greatest production from the smallest number of colonies; the second, double the number of colonies for the same production. Strange as it may seem this is the way it has worked out this season, each plan producing the same amount of honey. Then why double the number of colonies? Next season will likely show the same conditions.

The eucalyptus district is rapidly filling up and threatens to become overstocked. There is less danger from spray poisoning than in the orchards. However, it is safe to say that orchardists are learning more of the value of bees for pollination and are more careful about spraying. One of our progressive cherry orchardists who a few years ago believed bees an injury to orchards, was induced to try bees after a failure of crops. He bought a lot of bees and placed them in the center of his orchard. He has had a crop each year since. Now he tells us that bees are a fine investment as pollinators, to say nothing of the honey.

Beekeepers of several counties have suffered severe losses from airplane dusting. The bees of Yolo County, including the U. S. Pacific States Bee Culture Field Station at Davis and the University of California bees at Davis, have practically all been killed. This same thing happened to the University bees last year. This matter of airplane dusting is indeed a serious one and if it continues to grow as it has during the past few years, the beekeepers may expect much trouble.—Cary W. Hartman, Oakland, California.

BRITISH COLUMBIA, October 5.

Weather: The rainfall in British Columbia this summer has been decidedly below the average. Early spring rains gave promise of a good flow from clover. During fruit blossom the weather was ideal and the bees had their full share of any nectar there was to be had. Also during maple bloom. In June and July we had more than our share of wind, and this in addition to two or three very hot spells, dried everything up, and it looked as though the clover flow would suffer from the drouth. As a matter of fact, this did happen in many places, and had it not been for a welcome interlude of two or three days of intermittent rain we should have had none at all. Some good rains in the second week of September freshened things up and from then to present date (October 5) we have had hot dry weather with the glass still high and rising.

Honey Crop: Notwithstanding all these apparent assets the honey crop was on the whole disappointing after our high hopes in early spring, although some producers in certain districts were satisfied with their harvest. Many report a darker honey than usual, for some unknown reason, and this we certainly attribute to the drouth and drying up effect of the winds. Final reports are not yet to hand, but it would appear there is every prospect of the bees storing up a good winter supply, owing to the prolonged Indian summer. During October we should know just what surplus the various districts produced, but we fear our high hopes of spring have not been fulfilled.

Miscellaneous: Since our last notes we have to report the passing of our late provincial apiarist, Mr. W. J. Sheppard, who was associated with the beekeeping activities of the province for very many years. Since his superannuation about five years ago he still acted as inspector for Vancouver Island, and although latterly not in the best of health his passing came as somewhat of a shock to his many friends. He was always a special friend to the small beekeeper and amateur, and distance was no object when a beginner needed help and advice. His passing will be mourned by his many friends.

Our present apiarist, A. W. Finlay, is indefatigable in his efforts to consolidate the beekeepers of the province and is now making tentative plans for the annual registration of all apiarists. This would cer-

tainly simplify reports as well as inspection work and we are in hopes this will be carried out by the Department of Agriculture.—Florence A. Greenwood, Vancouver Island, B. C.

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MANITOBA, October 3.

Weather: The past season is described by some as the best July and the worst August for the production of honey since they started with bees. The weather has not been good for bee inspection as it has been cloudy and cool. Last night brought the first frost worth mentioning.

Honey Crop: Extracting is not finished except with the small producers. Thirty to two hundred pounds to the colony is the variation in yield. Strong wintered colonies and early packages had a decided advantage in that splendid weather in July but late May and June packages were not ready. Bees worked well in sections in July and a lot of fine comb honey is coming on this market this fall.

Honey Sales: Buyers have been very active but prices are lower, due to a great rush to sell by nearly every producer. Prices are now based on 7 cents for tens. Once before we had this price and all the honey was out of the hands of producers before Christmas, then the price went up to 9 cents before spring. I will not be surprised if this experience is repeated in the spring of 1936.

Miscellaneous: A recent report on imports of package bees received from the Customs at Ottawa credits Manitoba with bees to the value of $87,338 in the spring of 1935. This was more than three times as much as any other province and an increase of $12,718 over the previous year for Manitoba.

We have inspected more colonies of bees in this province this year than were registered last year. Paid registration gave us money enough to cover about the entire province. The percentage of disease found was no greater than other years. Inspectors are still at work on fine days cleaning up the corners of their territory and checking apiaries where disease was found. We are hopeful of getting splendid results from the activities of our inspectors this year.—L. T. Floyd, Winnipeg, Manitoba.

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KANSAS, October 10.

Weather: The weather in Kansas remained hot and dry until about the middle of August. At that time a series of rains came which cooled the air, and a combination of moisture and cooler weather enabled the plants to make a good growth. It was ideal growing weather for smartweed plants and they began to secrete nectar in northern Kansas during the last week of August and continued through the month of September. Rains came at an opportune time during September. On the first of September a copious rain of an inch or more was rather general over the eastern half of the state. Western Kansas received something less than an inch. Another rain which came on September 7 was widespread over the state. Following this, on September 25, there was from 1 to 3 inches of rainfall over the state. All during the month of September, when the temperatures during the day rose above 60° F., the bees brought in nectar from the smartweed.

Honey Crop: The smartweed honey flow is extended well over the eastern half of the state. In the south-central area the honey flow came about the middle of September, whereas in the northern region it was during the latter part of August and continued into September. The honey in the southcentral area is a blend of alfalfa and smartweed, very mild in flavor. The smartweed honey in northern Kansas is a pure smartweed honey, very mild in flavor as compared with normal smartweed honey. The honey crop from this blend in this latter region is equal to or more than the crop from white sweet clover and white clover. In other words, the smartweed honey crop of Kansas is of very high grade for this particular flavored honey.

Beeswax: Several beekeepers who operate large numbers of colonies have not been selling their beeswax but are holding it to use for manufacturing foundation. These same beekeepers at the present time have enough foundation on hand to supply them for another year. Beeswax is selling for 18 to 20 cents a pound.

Miscellaneous: During August the Kansas Beekeepers' Association held its annual meeting and elected officers. These officers for the ensuing year are: President, O. A. Keene, Topeka, Kans.; Vice-President, J. F. Rule, Chanute, Kans.; Secretary-Treasurer, H. W. Stewart, Highland, Kans. This annual meeting was held at Washburn Park, Topeka, Kansas, on August 11.

The two large fairs in the state, namely, the Kansas Free Fair at Topeka, and the Kansas State Fair at Hutchinson, were very successful. The bee and honey exhibits were as large as usual and evidently there is more interest being taken by some beekeepers in this work.

With the fall honey flow from smartweed there has been increased activity in colonies and there are sufficient young bees to carry colonies into winter in good condition. There also is sufficient honey for the colonies' needs during the fall, winter and spring. Beekeepers who had to feed extensively this past spring are leaving plenty of honey with the colonies this fall.—R. L. Parker, Manhattan, Kans.

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SOUTHERN INDIANA, October 1.

Weather: This has indeed been a peculiar season. The weather was wet and cold up to nearly July. Then it became hot and dry. The thermometer registered 100 and above every day for weeks. Then the last of September the weather became cold and wet. However, on the whole it has not been a bad season. Sweet clover yielded fairly well and the flow from smartweed has been the best in years. Colonies are in good shape with hives packed full of honey for winter. Aster and goldenrod promise a good flow from now until late October.

Miscellaneous: I had a boy working for me who had never seen a real honey flow till the smartweed came. I explained about robbers and told him whenever the robbers were troublesome to stop up the entrances of the hives with grass. One day I saw him tearing around the bee lot stuffing up the entrances. He had about fifty stopped up and was making rapid progress on the rest. I asked him what was the idea and he said all the bees were robbing. I explained that a honey flow was on and the bees were working and not robbing. The bees with pollen on their legs were clustered on the grass in the entrances and seemed to say, "What the heck?"

I believe few beekeepers realize the great advantage there is in leaving a large quantity of honey on the hives. This season we made increase and where we had some three-frame colonies we put in three frames of honey; enough, so I thought. On others of equal strength we set hives filled with honey as we had no other place for them. We were greatly surprised to see how much faster these colonies with 70 pounds of honey built up than those with 15 or 20. Bees certainly take inventory of their stock and keep brood rearing well below the danger point.

Honey is in fair demand considering how other things sell. Bakers are using more honey every year in bread making and they report the honey bread outsells the other.—Jay Smith, Vincennes, Ind.

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WESTERN OHIO, October 8.

Weather: The weather all through September was cool and dry, very unfavorable for work by the bees. Very little nectar has been gathered through this period.

Honey Crop: This was one of the most peculiar seasons in all our experience in the commercial honey business. One yard would produce a fair crop while another yard not over four miles away would produce practically no surplus. While clover was abundant also sweet clover and moisture conditions more favorable than a year ago, yet there was no nectar. Hence the honey crop in northwestern Ohio was almost a failure.

Aster is now in full bloom but it is too cold for bees to work. So our fall flow which looked very promising is very disappointing. Conditions of honey plants continue to look well. One would consider the outlook for 1936 very encouraging. Conditions of bees are equally good. Where beekeepers extracted too close, expecting a fall flow they may have to feed to carry their bees through the winter. Those beekeepers who use the food chamber are not worrying about the bees having enough stores for winter and spring. About four years ago we adopted the food chamber system and we would not go back to the old practice of a one-story brood chamber. It takes about 50,000 pounds of honey to winter our bees. This is a lot of honey but when the price of sugar is almost equal to that of honey, it would be foolish to extract honey and feed sugar.

Miscellaneous: Beekeepers are getting ready to pack their bees for winter. At the present writing we are still extracting honey and have six more yards to finish the season's work. The weather was so cold that late extracting was very slow. This season for the first time in a number of years we have requeened every colony. In a good many years this was very necessary. So we are all set for the coming season. Honey is selling at a fairly good

price. About 7 cents is the prevailing price. It is about all sold, and there will not be any carry-over.—Fred Leininger, Delphos, Ohio.

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GEORGIA, October 7.

Weather: Summer showers lasted two weeks longer than usual. This was not detrimental to the honey plants as they continued to grow and flourish, but it did interfere with the work of the bees greatly; consequently we had a very short fall flow (Mexican clover mostly). Yellow, slender goldenrod is coming into bloom with a heavy growth, and more generally distributed than ever before. The beekeepers are expecting enough from this source together with the remainder of the Mexican clover to winter the bees, and they are now removing the clover honey.

Honey Crop: Because of no general rain the honey crop is short in about 30 per cent of the state's area. When rain did come it continued steadily throughout the mountain section, which accounts for the almost failure of the famous sourwood honey crop. At the present time asters and goldenrods are out over the entire state, and bees are very busy gathering pollen and storing honey, but the nights are cool, and the bees have entirely quit building comb, or much capping. Consequently they are filling up the brood nest, crowding the queen out. The beekeepers are still to the good since there will be plenty of honey right down around the brood nest to winter the bees on, and all the supers can be removed where this has occurred, and the bees confined to one story, which is ideal for wintering.

Miscellaneous: For the first time since the organization of the Georgia State Beekeepers' Association, July 3, 1920, we will not have a meeting this year because of the absence of our president, H. F. York, Jesup, Ga., and the long vacation of our secretary and treasurer, J. B. Hunter, Quitman, Ga., who is on a visit to the Pacific Coast.

Honey has been moving satisfactorily, but prices have been extremely low, and have not advanced any in the last twelve months. The beekeepers think that prices should advance along with other foods, but nothing has been done about it, and they are not holding their honey for better prices.—J. J. Wilder, Waycross, Ga.

FLORIDA, October 5.

Weather: Cool nights and mornings are with us. While we have not experienced any extremely hot days this past summer, the fall weather is always welcome. We have had an excess of rain throughout the state during the summer, and in some sections this has damaged the fall blooming nectar producing plants. How much, remains to be seen. The Everglade section has had lots of water during and since the storm. The undrained land where the sunflower grows has been covered with water for quite a while, but if this goes off there is still hope for a crop from this source.

Honey Crop: The yield from all sources for the central part of the state for the season has been a disappointment. The orange was almost a total failure, very little saw palmetto, and in our section black mangrove was a failure—no surplus. This is the section from Daytona Beach south along the Halifax River. Some report a light yield further south from this source down among the keys. The plant had ample bloom but the nectar was not there. Cabbage palmetto gave us the only surplus extracted this season in our section. Most of the bees are back on the orange locations now waiting for the 1936 crop, which we hope will be a better one.

The northwestern part of the state produced about 50 per cent of a crop. The spring flow from titi and other sources was fair but the tupelo was spotted from 50 per cent to a normal yield in a few cases. The grade of the tupelo was of the best, so this will help some to take care of the low yield.

Honey in a wholesale way is moving good with us, owing to the scarcity, and in most instances a few cents higher per pound than last season.

Miscellaneous: Some beekeepers are discouraged and are advertising their bees for sale, but this is always the case after a bad season. But after twenty years with the bees we think this a bad time to sell, for we hardly ever have two failures right together and next year may be a hummer. Anyway, the only way to make a success with beekeeping is to stick to it through thick and thin, and with plenty of hard work one can make a nice profit some seasons. Very few have made a fortune, but you can, if you will give the bees half a chance, make a good living. I know personally beekeepers in this state who

did not feel the depression nearly so much as others, and the writer happens to be one of them.—N. Forehand, DeLand, Fla.

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ONTARIO, October 10.

Weather: At this date we are busy feeding the bees for winter and repairing packing cases and doing other work incidental to the work that is always necessary every fall if we wish to winter our bees properly in this northern latitude. For the past month the weather has been much colder than the average and I think that this condition applies quite generally over all of Ontario insofar as I can learn.

Honey Crop: Latest reports state the buckwheat crop is but 25 per cent of normal yield, this, of course, being caused by drouth in many localities and cool weather during the latter part of August. In our own apiaries we have just double the amount of buckwheat that we had a year ago, and while the price of buckwheat honey is not high, yet the crop will cover all feeding bills and leave a snug balance. Final reports on the white honey crop show that it about equals that of last year, and that means better than an average yield for the province.

Miscellaneous: Bees appear to be in good condition with some of our apiaries having all too many bees in the hives to suit us. Amount of feeding to be done locally is about normal and where second stories are used for winter, little feeding will be necessary. As many know, we do not like the double brood nest either with full depth super or the shallow super, commonly called the food chamber. While the second story is used by many good beekeepers and they have some things to recommend them, yet personally we think the advantages they have are more than equalized by their disadvantages. To show that we really believe this to be true in our case at least, it is only necessary to state that with about 800 colonies going into winter quarters, only 15 have a shallow super over the regular brood nest and not a single colony has a full-depth super so placed.

Market conditions are about as stated in my last report—little actual change but a healthier feeling, with many beekeepers much more optimistic and others sorry that they sacrificed their crop due to a panicky feeling that was quite prevalent a few weeks ago. I personally know of a carload or two of very fine honey that was sold at a price that was so low that I wondered what had happened to the producers to induce them to sell at such a price. Even with the export market quite low, that market could have cared for the honey I have in mind for at least a cent a pound more—which is quite an item on 20 tons or more.

The annual convention of the Ontario Association will be held in Toronto on November 20 to 22, and I certainly look for a bumper attendance this year. This year some contentious problems will be facing the beekeepers and that means a lively time with a full house. Of course, we look as usual for a good number from "over the line," and enough matters will come up aside from local questions, to make it interesting for all.

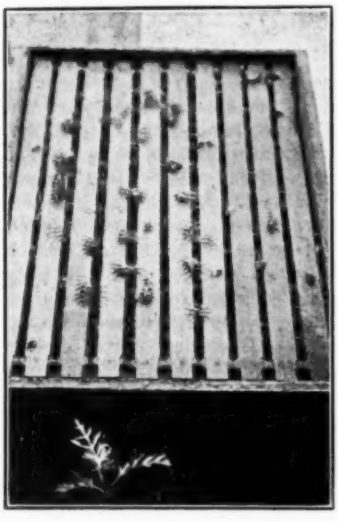
Since my last reports in this column, interesting developments that were not expected, have changed the outlook for the Marketing Act for this year at least. As I understand the matter, the Minister of Agriculture for Canada had granted the petition of the beekeepers who asked for this legislation. The directors had hired a man to go ahead and make arrangements for putting the Act into practical use. Among the duties assigned him is that of putting machinery into motion to collect a toll of one-fifth of a cent per pound from all honey produced in Ontario. A circular letter was sent out to all registered beekeepers giving this information and asking them to meet at Guelph for a general discussion and for the making of final arrangements. Unable to go myself, on account of the serious illness of a member of the family, I can not give first hand information about this meeting. However, parties who were present agree that the meeting was tempestuous and the large number insisted on a vote being taken which resulted in a drastic demand by two votes to one, that the legislation not be put into effect.

While this vote would not prevent the directors from going ahead with the scheme, it would be quite a job to enforce the Act with such a large dissenting body among the producers. Just lately I heard that they still intended to do something in the way of getting the scheme to function this year, but personally I look for the matter to be left in abeyance until the annual meeting of the Ontario Association.—J. L. Byer, Markham, Ontario.

Heads of Grain from Different Fields

That Burr-Comb Problem

Many a beekeeper, I venture to say, has been perplexed when he found his frames welded together as shown in the illustration. Since it is easier to prevent than to cure, let us get at the preventive side of the problem. When a colony is ready to store surplus and no super is above the brood chamber, as happened in this case, the bees will build burr comb in every small place conceivable—between the top bars and in the space between the top bars and the hive lid. In order to prevent the bees from building this comb, one should place an empty super above the brood chamber in ample time for the honey flow. But should one neglect the preventive, let us take up the cure. At a time when the frames are easiest to get at, they should be removed one at a time and the wax particles cleaned thoroughly from the sides and top of the frames. Cutting the wax between the frames before attempting to remove them is necessary. Once the frames are scraped clean, the bees will not weld them together again unless they become crowded for storing space. The burr comb between the frames detracts from the interior appearance of the hive but its chief objection is the difficulty which arises when one desires to remove the frames for examining a colony. Also the bees are greatly restricted in going up into the super when storing honey because usually there are only a few small openings through which the honey-laden workers may pass.—Clarence J. Tontz, Stillwater, Oklahoma.



Brace combs and burr combs present their problems.

[It appears from the picture that brace combs as well as burr combs are present. As we understand the terminology, burr combs refer to pieces of combs that are built lengthwise and crosswise between the hives and the super, or between the two sets of frames, while brace combs refer to the strips of combs built between the top bars.—Editor.]

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Cyanogas Fixes Robber Bees

In working a large yard after the honey flow, bees sometimes start robbing and make the work disagreeable. These few robbers that follow you all day and land on the exposed combs and buzz around your ears can be killed by the use of Cyanogas. Stop inspection work, cover all hives and place a dummy hive where you picked up the last super. Put a tablespoonful of Cyanogas in the dummy. Then take time out for 30 minutes or so. The robbers will snoop around and find the Cyanogas and be killed.—A. G. Pastian, Aberdeen, South Dakota.

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Spring Just Beginning in New Zealand

We are just beginning our spring work (September 17) after one of the wettest winters on record. Rain is still falling but we keep hoping the clouds will soon disappear and we will get some sunshine. The bees have mostly wintered well and we are hoping the season will prove to be a good one. Are any of your correspondents stamp collectors? I would like to exchange some New Zealand Jubilee stamps for Canadian Jubilee stamps.—E. Paltridge, Matamata, N. Z.

A Swarm With Ample Ventilation

The accompanying picture shows a natural open air hive found near McGregor, Iowa, this late summer. The combs are

A good example of an outdoor swarm.

attached to the branch of a hawthorn tree. It is a very fine specimen of open air comb building.—Harry Lathrop, Bridgeport, Wisconsin.

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To Keep Bees Away from Bird Baths

Some one wrote us recently that a carbolic acid and water solution, such as is used for driving bees out of supers, could be used for sprinkling over a bird bath or a pool in a rock garden, where it is undesirable for bees to drink. We receive reports from beekeepers occasionally that neighbors are complaining about bees drinking from bird baths or fountains. We would be glad to know if carbolic acid solution will actually drive bees away from such places.—M. J. Deyell Medina, Ohio.

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This Two-Story Wintering

While wintering in two stories has the undoubted advantage of leaving the bees plenty of stores for the early brood rearing period in late winter and early spring, yet in some regions this advantage is sharply offset by other conditions. In my neighborhood it results in moldy combs and moldy pollen. In Oregon and Washington, west of the Cascade Mountains the climate is very damp in the winter, though the winters are mild. Some winters we have virtually no freezing temperture at all. Other seasons, a week or two may be the limit. So there is no trouble on that score, but the damp atmosphere does destroy pollen. One colony which I wintered over in two stories came out in the spring in a very weakened condition, although it was strong and had plenty of stores the previous fall. But the pollen was all destroyed by mold. Brood rearing was impossible until the bees got at the willow in February. Then they began to pick up, but it took some time for the colony to build up to full strength. The bees tore down a great deal of comb in order to clean up the hardened masses of moldy pollen. Single-story wintering is much more satisfactory in this region, although it is necessary to keep a close watch on the colonies in spring to see that they are well supplied with stores.—Forest Angel, Portland, Oregon.

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Another Way to Requeen

In requeening a very populous colony a little over a year ago, I was unable to find the queen, so I shook all the bees on to the ground a short distance from the hive. I put the new queen into the hive and paid no more attention to the bees that I had shaken out. Just a week later I happened along there and found a little ball of bees on the ground with the queen in the center of the ball. It was frosty fall weather but the queen seemed to be unharmed by the experience. I took her away and the bees soon left.—Arba B. Cottrell, Irma, Wis.

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Convention Meeting

The annual convention of the Ontario Beekeepers' Association will be held in Toronto, at the King Edward Hotel, on November 20, 21, and 22. We wish to extend a hearty invitation to all American beekeepers to attend this convention and take part in the discussions.

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Asphalt Paper for Packing

It has been my experience that when using tarred paper for packing bees, the

tarred paper becomes quite brittle after one year's use, so for two or three years I have been using asphalt paper. It costs about the same, and does not deteriorate nearly as fast.—Owen L. Clark, St. Clair, Michigan.

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Celotex Gives Satisfaction

I have been experimenting for years with Celotex for packing bees. I use ½" Celotex and line the hives with it on the inside instead of outside. I take out one frame and use two bodies. I first tried it for inner covers. It works best with wood rims of about ⅞x⅜". I put the rims over both sides of inner covers and clinch the brads which leaves room for the bees over the frames and an air space between covers.—F. D. Look, Campbell, N. Y.

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Food Chamber Does the Trick

We operate six out-apiaries. A large car to haul full or empty supers to and from the apiaries is used. We make a memorandum of the needs of each apiary before leaving it. Since all of the colonies are treated nearly alike, few hive records are needed. What records are kept are written in code on the front of each hive. To save time and labor, we prefer to leave plenty of honey with the bees, rather than feed sugar syrup. A full depth food chamber does the trick.—Miss Ethel Strayer, St. Paul, Nebraska.

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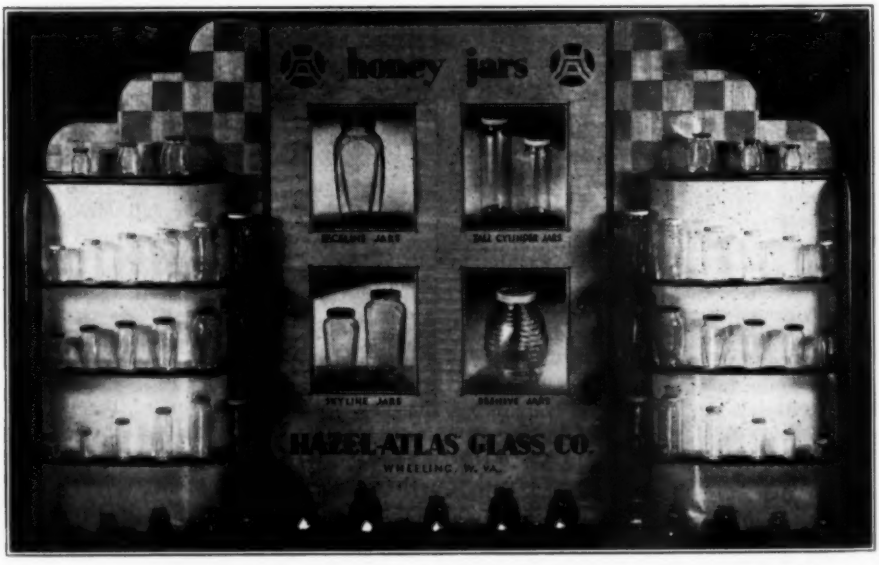
Bees Gathering Wax

I have been watching some bees working on a cake of beeswax. With their mandibles they gnaw off crumbs which frequently drop to the floor. When gathering them up to carry away, a bee uses first its mandibles and two front feet. Then it reaches forward with a middle leg, receives the wax particles, and transfers it to the pollen basket on the same side. The pollen combs are not used and there is no reaching across to the opposite side as in packing pollen for transport. Frequently the bee, with two front feet and one middle foot off the floor, losses its balance and tumbles over on its side. When packed in the pollen baskets, the wax has the appearance of small, ragged loads of whitish pollen. Bees carrying it can be seen at the entrances and on the combs inside the hives.—Flora McIntyre, Pasadena, California.



Much interest was displayed in the Hazel-Atlas Glass Company exhibit at the recent International Convention of Beekeepers at the Hotel Statler, in Detroit, October 7, 8, 9, and 10. External lighting effects served very attractively to illuminate the photographic murals of honey jars, mounted on warm gray veneer, in the central part of the display. The parchment pillars at either side presented the appearance of ground glass columns. Interior illumination of these pillars further enhanced the beauty of the display and served also to illuminate the honey jars in a very attractive manner.

A FEW HIGH LIGHTS OF THE DETROIT CONVENTION

(Continued from page 681.)

glass and tin would make but a very small profit. He brought out an array of figures showing the cost of glass, labels, labor and general overhead and ended by saying that his company would be able to make only one-fourth of a cent profit on a pound jar of honey.

Early in the season Mr. Straub believed that there would be an enormous crop and so his organization went into intensive advertising. The enormous crop did not materialize.

The Exhibits at Detroit

At the Detroit congress as well as the one at Valdosta, Ga., last December, there were numerous fine exhibits in a room adjoining the convention hall. There was on display honey baked products entered in the honey cookery contest of the American Honey Institute. Over across from this table were fine displays from Washburn-Crosby Products and the products of the the Kellogg Company, both of whom have been featuring honey. Back of these were the exhibits of The A. I. Root Company and of A. G. Woodman. Both showed their big radial extractors in action.

On the opposite side of the room were exhibits of the Wisconsin Beekeeping Association and the Michigan State Association and the Michigan State College. Over at one end was shown a honey filtering machine and electric refrigerators. A report of the honey cooking contest will be given in our next issue.

Hand Shaking and the Personal Contacts

As at all conventions so at this one in particular, the personal visitations, and groups between sessions were to some the best parts of the whole meeting. Were it not for these contacts between old friends some of whom they had never seen, many would not have come.

The Election of Officers

The newly elected officers are as follows:

For the American Honey Producers' League: T. W. Burleson of Texas, President; M. S. Stone, Utah, Vice President; Miss Arlene Weidenkopf, Wisconsin, Secretary.

For the American Honey Institute: Russell H. Kelty, President; Mrs. Malitta F. Jensen, Secretary; Miss Mercedes Cranston, Treasurer.

It was to be regretted that on the last afternoon when there was presented some of the best papers of the convention that so few were present. There were so many good things that the beekeepers could not digest them all.

(Continued next month.)

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A Word About the American Honey Producers' League

Those of you who missed the League convention at Detroit were unfortunate, indeed, because I have the feeling that it was the finest national meeting that has been held in the past twenty years. The question frequently arises as to what the League is doing. I think this question was answered at Detroit. Regardless of how many members the League may have, or what support it may get from the beekeepers, it is truly a going concern, and when it is possible to have such a national meeting as was held at Detroit, there is no question about its position as a national enterprise.

The editors of the bee journals will have editorials and stories, and I hope they will include praise that is due not only for the splendid program, but for the attendance, as well. The meeting was completely harmonious and contained the most constructive set of papers yet presented. It would have been worth while for anyone connected with the bee industry to have been present. Probably the most impressive feature was the attendance at the banquet. Prof. Kelty said there were 154 paid admissions, and there is no way of telling how many peeked through the keyhole! Personally, I felt very proud of the League at this meeting, and if it is continued with such able management, there should be very large crowds in the future.

I am not sure who was responsible for the development of all the details, but President Newton, Secretary Milum, and "Straw Boss" Kelty, otherwise known as "Ike," should undoubtedly be given most of the credit. For the Institute, President Kelty, Mrs. Jensen, and Mr. Parks are due congratulations.

If the League was ever entitled to a boost, now is the time, and the appreciation of the beekeepers can be best expressed by sending in $1.00 for their dues. —H. F. Wilson, Madison, Wis.

Talks to Beginners

M. J. DEYELL

Colonies of bees in practically all parts of the United States and Canada enter a period of quiescence during November. Bees should be disturbed as little as possible during the fall and winter months. If all of the requirements for successful wintering have been supplied prior to November, there is nothing the beekeeper can do to better the condition of the bees.

A Late Aster Honey Flow

In some regions where wild aster is plentiful, bees frequently gather nectar from this source during late September and early October. This year aster bloomed later than usual and a warm spell of weather brought on a honey flow in some regions of the North during the middle of October. Most of this honey was stored in brood chambers.

It used to be thought that late aster honey was unsuitable for winter stores. It has been found more recently that this honey, if properly cured or ripened by the bees, is suitable for winter bee food. When a late honey flow is followed by a spell of warm weather, the bees then have an opportunity to evaporate the water content of the nectar. If, however, cold weather sets in immediately following a late fall honey flow the honey may not be thoroughly ripened and this may result in abnormal wintering. However, it is seldom that populous normal colonies of bees fail to do their duty. It is usually the weak or under-strength colonies that suffer under these abnormal conditions.

Don't Neglect Wintering Requirements

In some instances beginners may not have completed all of the preparations for wintering their bees. If feeding combs of honey or sugar syrup is necessary to supply a deficiency of stores, by all means feed. There are likely to be at least a few days during this month warm enough to open hives for such an emergency. Complete directions for making and feeding sugar syrup are found in the October Talks to Beginners.

If colonies require packing this work can be done during this month.

Cellar Wintering

Some beginners in the North may be planning on wintering their bees in a cellar. This may be advisable in regions of the far North where bees have few, if any, opportunities for winter cleansing flights. Where only a few colonies are to be wintered a cool dark fruit cellar may answer. The cellar should be absolutely dark and the temperature should range around 45° F. Bees should be put into a cellar sometime during this month, preferably around November 20, following a good flight. The hives should be carried into the cellar carefully in order to avoid any unnecessary jarring and the entrances should be left open in order to permit the colonies to carry out dead bees as they may accumulate during the winter. If mice are present in the cellar, traps should be used, or coarse screens, to keep out mice and permit bees to pass through, may be used over the entrances. It is a mistake to tack fine screens over hive entrances, as bees will try to get out and will worry themselves to death.

Protection for Bees Outdoors

Aside from additional insulation for hives, bees wintered out of doors should be located in some spot reasonably well sheltered from the winter winds. A good windbreak means much in successful outdoor wintering of bees.

Snow Keeps Bees Warm

Occasionally beekeepers wish to know if hives should be kept free from snow. As a matter of fact, hives of bees covered with snow are protected against the cold. So long as the entrances are free from ice the bees will get air enough and even though the hives are completely covered with snow the warmth from the hive entrances will melt the snow enough to permit sufficient ventilation. It is well to examine entrances of hives following an ice or sleet storm to see that they are clear.

Selling Honey During Winter

Usually it is possible for the beginner to dispose of all his surplus honey during the late summer and early fall. A neat honey sign erected in front of your dwelling house lets people know you have honey to sell.

Gleaned by Asking

THE EDITORS

What To Do With Thin Honey

Question.—The extracted honey is somewhat thin this year. Is there any danger that it will ferment in a warm room? What plan is best to prevent fermentation?—F. A. Myers, Ohio.

Answer.—The honey should be heated, to drive off the excess moisture and prevent fermentation. So long as it is not heated to too high a temperature for too long a time, it will not be injured. The cans of honey should be placed in a boiler containing hot water. They should rest on small pieces of wood to permit water to circulate around the bottoms. The temperature of the honey should be brought to 160° F. and allowed to remain at that temperature about 20 minutes, and then cooled. If honey is left at a high temperature the flavor is impaired.

Peculiar Odor in Apiary

Question.—I noticed a sour smell in my bee yard, so I started looking for European foulbrood, but found no trace of disease. What is the cause of this?—Chas. Pflueger, Illinois.

Answer.—The peculiar odor that you detect in your apiary is possibly from the fall honey or it may have soured. Goldenrod and aster usually yield quite freely in the fall when weather conditions are right. Goldenrod has a peculiar odor. We occasionally have beekeepers write in to tell us that they are afraid that their bees are diseased, because of the peculiar odor around the hives. We hardly think that you have any cause for worry concerning your bees.

Uniting Colonies Late in the Fall

Question.—I have five or six colonies that are not quite up to par in strength. Do you think I should unite the weak colonies, or should I attempt to winter them as they are?—W. J. Blaine, Illinois.

Answer.—It is a mistake to try to winter colonies that are below normal strength. Better unite all such colonies or use queenless package bees. You could perhaps unite two colonies into one, by setting one hive with bottom board removed, on top of the other hive, with cover removed temporarily. Colonies united in this way late in the fall do not, as a rule, fight each other. If you have no preference as to queens, the bees will take care of this matter. Usually the queen in the lower hive is killed and the queen in the upper hive is retained. If the colonies have ample stores you may wish to winter the united colonies in double story hives. If, however, there is a scarcity of honey in the combs, you can remove the empty and partly filled combs, leaving enough combs quite well filled with honey to occupy a single story hive.

Amount of Wax Secured from Cappings

Question.—I am a producer of extracted honey. I have often wondered how much wax is secured from one hundred pounds of extracted honey produced. I have never kept tab of this matter in my apiary.—A. J. Price, Iowa.

Answer.—The amount of wax secured from cappings would depend somewhat on the number of combs used in extracting supers. For instance, some producers of extracted honey use nine combs in a ten-frame super while others use eight combs in a ten-frame super. There may be a few who use ten combs in a ten-frame super. It is easy to understand that more wax would be secured from cappings where eight combs are used in each super, than would be the case with ten combs in each super because the cells containing the honey would be built out a greater distance from the midrib of the comb and consequently the cappings would be thicker and would, of course, contain more wax. In our apiaries we space our combs nine to each ten-frame super. We find that approximately one pound of wax is secured from each one hundred pounds of honey. A few years ago we had 70,000 pounds of extracted honey and seven hundred pounds of wax from the cappings.

Location for Hive Entrances for Winter

Question.—I winter my bees out of doors and I am wondering if it makes any difference which direction the entrances of the hives face. Some of the hives are facing north and west and I can't see any difference in the way these colonies winter as compared with the hives facing east and south.—George D. Hall, Ohio.

Answer.—There appears to be an advantage in having hives face east or south during the winter. The prevailing winter winds usually come from the north and west. The sun shining directly on the entrances of hives from the south and east during the winter has a tendency to keep the entrances drier, also to melt any ice that may accumulate over the entrances following a sleet storm. It stands to reason that hives facing away from the prevailing winds are better protected

than are hives facing the winter winds. Of course, a very important factor in sucessful wintering is that of having natural or artificial windbreaks to protect your apiary.

Fall Honey for Winter Stores

Question.—This fall we are having a late honey flow from asters. I am afraid the bees may not be able to ripen this honey properly before winter, and, consequently, this may cause trouble during the winter. Is there anything I can do to correct this condition?—J. A. George, Pennsylvania.

Answer.—As a rule, populous colonies of bees will winter successfully on fall honey. Weak colonies may not be able to cure the honey properly in the fall and may suffer from dysentery during the winter. If any of your colonies are not quite up to par in strength it would do no harm to feed each a ten-pound pail of thick sugar syrup.

Feeding Syrup Cold or Hot

Question.—Some of my bees will need feeding this fall. I know how to make the syrup but I am not sure whether I should feed it cold or hot. What is your advice?—J. H. Cutler, Michigan.

Answer.—During warm weather bees will take cold syrup quite readily. During cool fall weather it is an advantage to feed syrup that is warm or almost hot. For late fall sugar syrup should be fed hot, in friction top pails, with the covers on the pails perforated with small holes, with the pails of feed inverted over the frames, or over the holes in the inner covers. The warm syrup has a tendency to cause the bees to break their clusters and start taking the syrup immediately after it is put on the hive. Of course, the syrup cools off in a relatively short time, and may have to be reheated occasionally if weather continues cold. It is an advantage, when feeding late in the fall, to cover the feeder can with pieces of burlap or some such material in order to retain the heat of the syrup, also the heat of the bees, as much as possible while the bees are taking the syrup.

Requeening Late in the Fall

Question.—The other day while I was checking over some of my bees I found two colonies that appeared to be queenless. Is it too late to introduce queens at the present time?—Jacob A Graham, Ontario.

Answer.—It is sometimes a little difficult to determine whether or not a colony has a queen late in the season. Colonies are practically broodless at this season of the year in your province. If you are sure that the colonies in question have no queen and if they are strong in bees and worth requeening, you should be able to introduce queens, even at this late season. We have found that colonies accept queens readily late in the fall. This may be due to the fact that there is very little brood, if any, in the hive. Furthermore the bees are somewhat listless and consequently do not object to a new queen at this season of the year.

Wintering in Single or Double Story Hives

Question.—I have some double-story hives containing very strong colonies of bees. The upper story, commonly called food chambers, are well filled with honey but the lower stories do not contain very much honey. There is about 50 pounds of honey in each two-story hive, 40 pounds in the upper story and 10 pounds in the lower story. Would you advise me to remove the lower stories and winter the colonies in single-story hives, or, would you think it best to winter the bees in double story hives?—John L. Morris, Nebraska.

Answer.—Inasmuch as your colonies are very populous and appear to have an ample amount of stores for winter we advise you to winter each colony in a two-story hive. If the colonies have been operated in two stories or double brood chamber hives throughout the season they doubtless have the honey and pollen arranged in the comb as they want it for winter. It would be a mistake, in our opinion, to disarrange these combs. If you give your colonies ample protection against the cold weather they will doubtless winter successfully. If your colonies were not populous in bees and if they did not have an ample amount of winter stores, it would certainly pay to reduce each colony to a single story hive and then supply any deficiency in stores, either by giving combs of honey or sugar syrup. A powerful colony with ample stores will get on well in a double story hive but a colony that is not up to normal strength is likely to winter better in a single story hive.

Mice Bother Hives in Winter

Question.—How can I keep the mice out of my hives during the winter months? They build nests and chew up the combs.—J. L. Dyce, North Carolina.

Answer.—Put an entrance reducer in each hive which will reduce the entrance down to ⅜ of an inch by 2 or 3 inches. This ordinarily excludes mice. A coarse screen that will exclude mice but admit bees may be placed over each entrance.

Taking Bees from a Tree

Question.—I know where there is a large bee tree. Do you suppose it would pay me to cut the tree down in order to get the bees at this season of the year, or should I wait until next spring?—W. A. Solomon, West Virginia.

Answer.—If you wish to get the bees to put them into a hive, you better wait until next spring at the beginning of the honey flow. It would be very diffi-

cult at present to transfer bees from a tree into a hive and to have the bees become established in the hive. The weather is too cold for wax building. If you wish to cut the bee tree to get the honey, all well and good. At this season of the year there should be some honey in a bee tree.

Shipping a Full Colony of Bees

Question.—Could I safely ship a full colony of bees in January or February, a long distance by express, or would it be best to wait for warmer weather in March or April? Would the shaking up of a cluster of bees in cold weather be apt to injure them or kill the bees? If I ship in cold weather would a screen be needed on the top hive, or only at one entrance?—Carrington Callaway, Virginia.

Answer.—It is possible to ship a colony of bees in your state during January or February a considerable distance by express, provided the weather is not cold enough to make the combs brittle. As a matter of fact, the bees should ship just a little better during cool weather than in warm weather. If you are shipping from north to south February would be a good month for shipping. If, however, you are sending the bees northward we suggest that you wait until March or April. Bees can be moved by truck a short distance if handled carefully, during the winter months simply by placing wire screens in the entrances. If you ship by express, however, the colonies should have top screens as well as entrance screens, in order to insure ample ventilation. The top screens should be protected in some way by wooden covers, cleated half an inch above the screen to permit a circulation of air to pass between the covers and the screens.

Dividing Strong Colonies in Spring

Question.—I have a number of very strong colonies in double-story hives, at least, they were strong last fall. Would it be possible to divide the strong colonies next spring, making two colonies out of each strong one, in order to secure twice as much honey as would be stored by the colonies if left alone?—Wm. Brandon, Indiana.

Answer.—If you find that your colonies are very populous in bees and have an abundance of stores next spring, it should be possible to divide the strong colonies. You can do this at the expense of an extra bottom-board, a hive cover, and a laying queen, for each colony that you divide. In your section of the state, northern Indiana, a very populous two-story colony may have brood in nine or ten combs the first week in May. Such a colony can be divided at that time by taking about six combs of sealed brood with the adhering bees, preferably combs having young emerging bees, also four combs of honey, and placing these in a hive on a new stand and introducing a young laying queen to these bees. Each of the divisions of the strong colony, with proper management, will build up to a normal colony in six or eight weeks, and should be ready for the main honey flow. If there is a honey flow on at the time of dividing, a super should be given to the division left on the old stand, to provide comb space for incoming nectar and brood rearing before the main honey flow starts. If the spring honey flow is unusually good the division on the new stand may also need a super before main honey flow starts. Of course, it is necessary to have an ample amount of honey in the hive or division on the new stand, because practically all of the old bees will drift back to the parent hive. In case the spring honey flow does not materialize, it may be necessary to feed each of the divisions some combs of honey, reserved for that purpose, or, sugar syrup. This dividing of strong colonies in the spring works to good advantage in sweet clover and alfalfa regions where the honey flow is of considerable duration. In a region where the major flow is from white clover and alsike and occurs earlier in the season than the sweet clover and alfalfa honey flow, it is difficult if not impossible, to get the divisions of a strong colony built up to full strength to take advantage of this relatively short rapid white clover and alsike honey flow. Some beekeepers in the West who practice dividing strong colonies in the spring carry this a little further and unite the two colonies back into one colony in the fall, after surplus honey is removed. The hive containing the young queen is placed on top of the hive containing the old queen. As a rule, the old queen disappears and the young queen is retained and thus requeening is brought about automatically. This very populous united colony is likely to winter well. This means a conservation of stores.

Arranging Colonies to Start Queen Cells

Question.—In Mr. Pritchard's article in the March issue, in describing the arrangement of the cell-starting colony, he says on page 148: "The hive in front is closed and left about an hour and a half when the bees will be ready to receive the grafted cells." Does this mean that the entrance is closed?

Answer by Mel Pritchard.—No, the entrance is not closed. By closing the hive I meant putting on the cover.

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FINE quality palmetto or mangrove honey in new sixties. Sample, 6c. Peter W. Sowinski, Fort Pierce, Florida.

CLOVER honey, choice, ripened on bees. Satisfaction guaranteed. Case or quantity. J. Stahlman, Grover Hill, Ohio.

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HARRIS quality clover extracted, white and light amber, new cans, case or car. Also thousand-speed Simplicity forty-five, in perfect condition. J. N. Harris, St. Louis, Mich.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF MARCH 3, 1933, OF GLEANINGS IN BEE CULTURE, PUBLISHED MONTHLY AT MEDINA, OHIO, FOR OCTOBER 1, 1935.

State of Ohio, County of Medina, ss.:

Before me, a Notary Public in and for the state and county aforesaid, personally appeared M. J. Deyell, who, having been duly sworn according to law, deposes and says that he is the Editor of Gleanings in Bee Culture, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of— Post office address—

Publisher, The A. I. Root Co., Medina, Ohio.

Editors, E. R. Root and M. J. Deyell, Medina, Ohio.

Business Manager, M. J. Deyell, Medina, Ohio.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

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3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state). None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is (This information is required from daily publications only.)

M. J. DEYELL, Editor.

Sworn to and subscribed before me this 27th day of September, 1935.

HAROLD C. WEST, Notary Public.

(My commission expires Mar. 27, 1937.)

JUST NEWS

(Continued from page 682.)

clude "Green Magic," "The Astonishing Ant," "Children of a Star," "Wild Wings," and this volume, "Cities of Wax," is her last. It is said of her that "Her special interests beyond a passionate fondness for music are botany, birds and nature in general." The preface of her "Cities of Wax" shows that she has "drawn material in writing this book about bees from A B C and X Y Z of Bee Culture, by A. I. and E. R. Root; Langstroth on the Honey Bee, by C. P. Dadant; Productive Beekeeping, by Frank C. Pellett; Queen Rearing Simplified, by Jay Smith; The Lore of the Honeybee, by Tichner Edwards; The Argentine Ant, by L. O. Howard; Agricultural Bulletin No. 122 (1913); and Anatomy and Physiology of the Honeybee, by R. E. Snodgrass." A somewhat cursory perusal of the pages of her book shows that her careful reading has been supplemented by some real practical experience with bees. Her book reads like a romance. Her minute descriptions of what occurs in and out of the hive is singularly free from error of fact. She compares human life with bee life. "She tells of the work, play and organization of one of the most amazing creatures of the earth." In fact, she covers what is technically called bee behavior more fully than has been done before in any one work, and she has done it remarkably well. The one who keeps bees for the honey and the money he can get out of them may not find this treatise so helpful as some of the other works on bees. But the student or the one who keeps bees for pleasure will find her book a real revelation—a romance with a little imagination and fund that will fit well in his studies of the "most amazing creature in the world." The author's knowledge of the life habits of other insects whose behavior is somewhat similar to what we find in bees, gives an added value to her studies of the bees. The volume is illustrated with some original pen drawings by Henry C. Kenley. Those showing the bees are very much above the average in accuracy of detail. They are drawn several times larger than actual life size, thus enabling the reader to see not only how the bees actually look under a microscope but the fuzz or fine hairs that catch the pollen dust in the blossom. The book may well be classed among the standard works on bees. The price is $2.50 and can be furnished from this office.

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